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MARKET FORECAST

Desktop Systems Integration Market

U.S. Systems Integration Program

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Abstract

Desktop Systems Integration Market forecasts the expenditure, by user organizations, on systems integration projects that are based on desktop platforms. The report will help you identify the industry segments with greatest potential for desktop systems integration (SI) business as well as explaining the technical and marketing requirements for vendors in these markets.

By analyzing the market from user and vendor perspectives, a clear picture is drawn of the market opportunities. In addition, the differing types of vendors are identified and their strategies explained.

There is a change in the profile of those users who make the buying decisions surrounding desktop-based systems integration. The evolution of influence of various user groups is discussed as well as the impact this has on the SI vendor sales force.

The *Desktop Systems Integration Market* report concludes with a discussion on keys to success in desktop SI. This chapter addresses some to the elements that could increase the potential for a vendor's success and can assist their pursuit of specific strategies in this growth market.

Published by
INPUT
1881 Landings Drive
Mountain View, CA 94043-0848
U.S.A.

Systems Integration Program

Desktop Systems Integration Market

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SI3 • 683 • 1993

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A. Industry Sector Definitions D-1

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I

Introduction

Little more than 10 years ago the personal computer (PC) moved onto the corporate scene when IBM, the dominant force in computers, lent its name to the original 8088 chip-based machines. Though the idea of a desktop computer was not born at IBM, it was their blessing that signaled the advent of these machines as legitimate corporate citizens.

The majority of corporate information systems (IS) mainframe-oriented organizations disdained the new little computers as toys. They ignored PCs until they became pervasive and began to takeover real processing functions. The manufacturers of mainframes and minicomputers also disregarded the revolution taking place until their control of data processing waned.

Gone with the ever expanding IS empires and big computers, is the five- to seven-year technology cycle that allowed time for staff training and the extensive automation development projects that sometimes failed on their promised greater efficiency than their manual precursors. The cycle time for technology seems to be more like minutes than years and vendors must keep pace just to survive.

The incorporation of desktop systems within networks and their working in partnership with other platforms has become the center of technology growth for those who provide technology products and services. Vendors must either confront the new mix of issues to prosper, or run the risk of following their predecessors downhill.

A

Purpose

The purpose of our report, *Desktop Systems Integration Market 1993-1998*, is to provide an analysis of the market for external integration services at the desktop systems level in the U.S. This form of broad service responds to the increasingly complex desktop systems being implemented within user organizations. To accomplish this analysis the report must isolate the platform environment, then explore the delivery modes of systems integration and professional services for their applicability and utility.

What is a “desktop system”? INPUT defines (see Appendix A.) a desktop system as one where both the data and the application system reside within the desktop unit platform while processing. The desktop platform may be classed as either a personal computer or a workstation. By this definition, all microcomputer-based client /server systems would qualify as desktop systems. However, network connection is not a requirement and many standalone application solutions are considered desktop systems.

The second portion of this report topic addresses two delivery modes, systems integration (SI) and professional services (PS). SI is defined as a vendor service that provides a complete solution to an information system, networking or automation development requirement through the custom selection and implementation of a variety of information systems (IS) products and services. A systems integrator is responsible for the overall management of an SI contract and is the single point of contact and responsibility to the buyer for the delivery of the specified system function, on schedule and at the contracted price.

To separate this level of service from customized turnkey systems, INPUT expects SI contracts to result in a modification of at least 50% of the application software.

INPUT's PS delivery mode includes the sometimes separate services of: consulting, education and training, software development and applications management. Although all SI contracts contain PS elements, potentially from the same vendor, there are many PS specialized management consultants who perform one or several of the PS components.

Because this report subject probes the need for users to engage external integration vendors for assistance with desktop systems, INPUT avoided the limitations of the full definition of SI and remained open to all application projects where external integration services apply. Although the most opportunity exists with network situations, INPUT believes even standalone systems will become an appropriate market place for services as desktop units and the systems they support become larger and more complex.

The report approaches the topic from the perspective of both users and vendors.

- Does this present a new opportunity to desktop service vendors who can introduce SI-type services?
- Does a fragmentation of the market present a threat to traditional SI and PS vendors?
- Who are the potential new vendors and what do they need to do to take advantage of the opportunities?
- What do users look for in desktop external integration vendors?

Finally, the report contains a market forecast for this growing subset of the SI market.

B.

Scope and Use

Effort was made to restrict the data to application systems that met INPUT's definition of desktop (see Appendix A.).

A more liberal definition of SI than normal was used to avoid missing significant integration projects. Specifically, though significant modification to standard products was still required, the normal INPUT requirement, that greater than 50% of the application or equipment be modified, was not strictly applied.

A variety of vendors was chosen to represent the several perspectives of desktop services. The mix includes traditional large firms, as well as specialty service providers and emerging integration companies.

The federal market was not considered for this study because of its unique rules and regulations regarding its contracting process.

Since the report's primary focus is on the user reasoning and selection process, as it relates to desktop systems, its principal use is to assist vendors in determining appropriate paths to approach this growing market. This is also an advantage to users, since vendors can be better prepared to meet the needs of businesses. Additionally, our vendor inquiries can provide insight into their vision of this market and what they are doing to extend their franchise.

C

Methodology

Data for this report was derived from both primary and secondary research.

INPUT's extensive database of application projects was used to provide a base of information regarding current desktop SI activity.

- Primary data was collected from structured interviews with selected and random, vendors and users. Separate questionnaires (Appendixes B and C) were developed for vendors and users to cover both objective and subjective topics.
- The results of this investigative research have been correlated, analyzed and conclusions developed. Any discovered discrepancies were resolved and results verified by industry experts.

D

Related Reports

For additional insight into desktop services market, readers are encouraged to consult other topical INPUT reports such as following:

Outsourcing Desktop Services, December, 1992
Methods of Approaching IS Outsourcing, May 1992
Outsourcing Network Management Operations, July, 1992
IS Outsourcing Opportunities 1992-1997, November, 1992
Systems Architectures for Downsizing, April, 1992
Putting Downsizing in Perspective, January, 1992
Case Studies in Downsizing, August, 1992
Methodologies for IT Downsizing, October, 1992
Strategic Assessment of IS Outsourcing, November, 1992
IS Outsourcing Market Opportunities, December, 1992

Supplemental information regarding the SI marketplace is available through INPUT's unique, comprehensive and authoritative *Business Integration Program.*

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II

Executive Overview

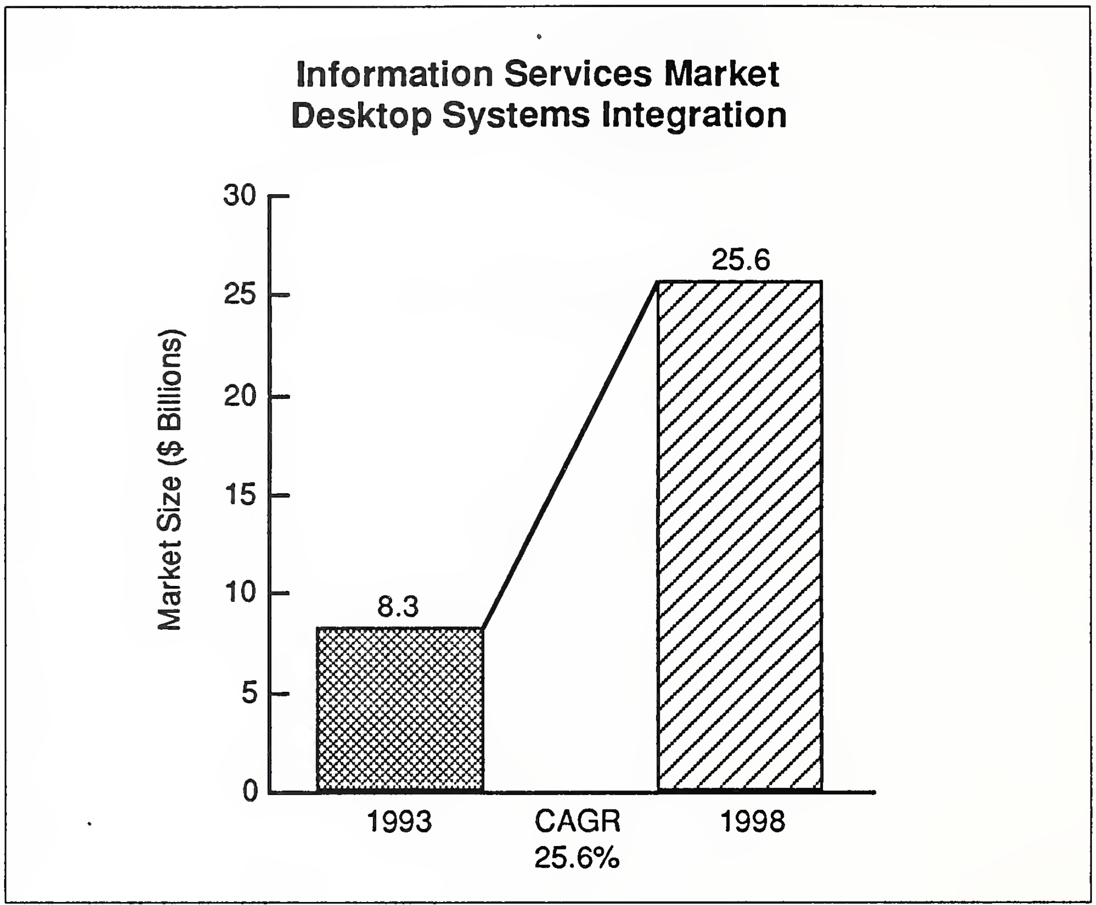
INPUT's research has determined desktop systems have become the favored platform for application systems implementation. Because desktop systems are found in all businesses and have been for several years, this may sound like an elementary conclusion. What is different are the uses of these machines and their growing role as primary and peer processing platforms for applications that previously only existed in larger environments. This is the case even in the largest companies and INPUT believes the desktop platform share of the market will continue to increase over mainframe and minicomputer platforms at all business sizes through the rest of the 1990s.

A

Desktop Systems Integration Market Forecast

As desktop systems have become more complex, a market has grown to provide integration services to support their use in businesses. Exhibit II-1 shows the market for services to support (nonfederal government) desktop systems integration, which is substantial and expected to grow at a compound annual growth rate (CAGR) of 25.6% from $8.3 billion in 1993 to $25.6 billion during 1998.

EXHIBIT II-1



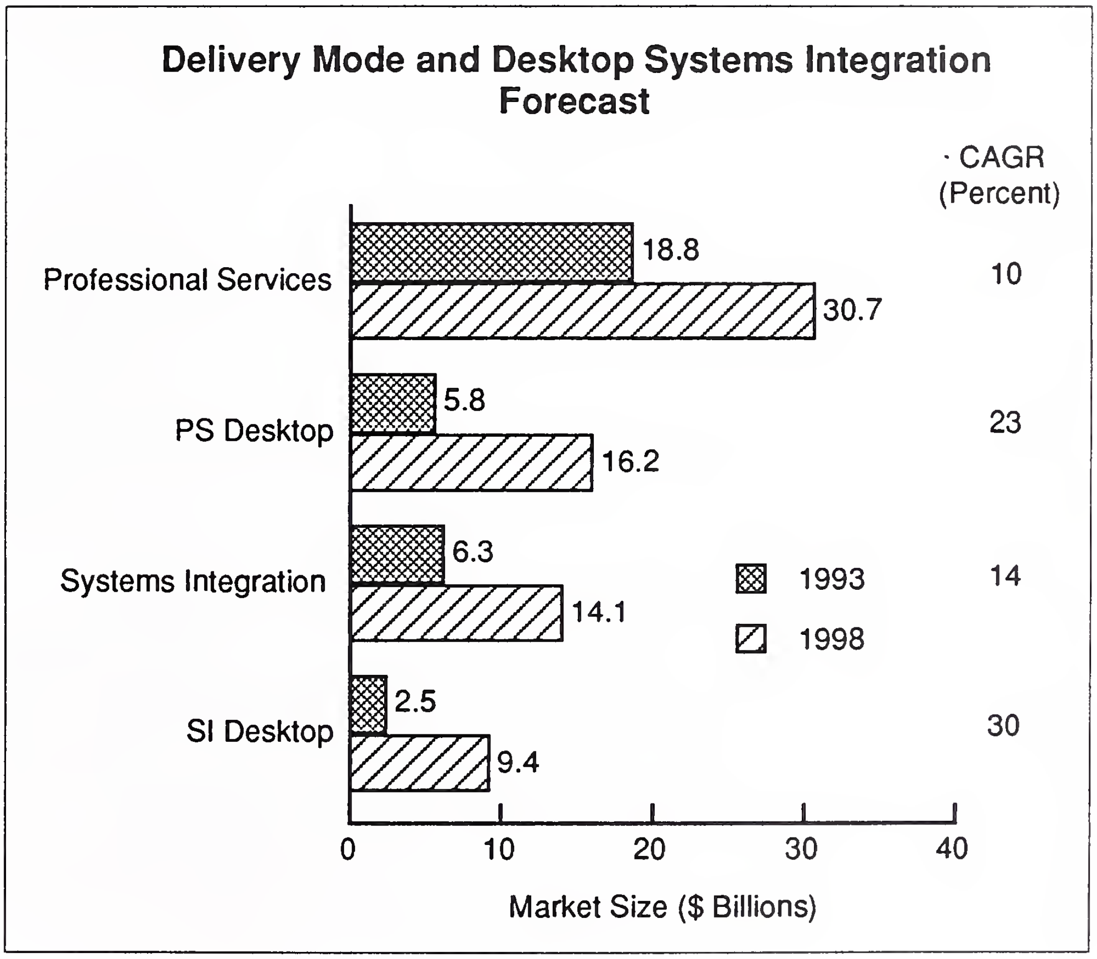
INPUT's forecast is a subset of existing total market forecasts and does not constitute additional business, but forms part of two delivery modes, professional services (PS) and systems integration (SI), when viewed by platform type. The market for services to support desktop SI is growing rapidly. INPUT predicts this growth trend will continue and increase in pace over the five-year forecast period.

Although INPUT's sample of application projects shows desktop systems have attained a numeric superiority over other platform types, its share of the market expenditures remains lower than the share for services that support other platform types. INPUT believes this dichotomy is related to the lower cost for the implementation of desktop solutions. The factor of lower solution cost will be the primary reason for more services markets to be driven by the implementation of desktop systems. A significant part of desktop solutions lower cost is that these projects frequently include the use of a business' existing desktop equipment within the system.

The federal government sector has not been included in this report because of its unique rules and regulations regarding contracting processes.

The support for desktop SI is a portion of two delivery modes: SI and PS. Exhibit II-2 shows the combined forecast for these two modes (excluding the federal government sector) and the underlying portion of the modes that constitutes the desktop systems portion.

EXHIBIT II-2



The combined INPUT forecasts for (nonfederal government) SI and PS delivery modes create a 1993 market size of $25.1 billion projected to grow at an 11.3% CAGR reaching $44.8 billion during 1998.

Although INPUT forecasts substantial growth for each of the delivery modes and significant change in the level of desktop services, the characteristics are different for each of the subject delivery modes. Differences are noted in both their projected overall growth patterns and the portion forecast for desktop integration.

1. Professional Services

The PS market lead over SI is cut from three times to slightly more than twice as large over the next five years. This change is due to the substantial difference in projected growth and the shift of user demand to SI style of contracts. INPUT forecasts the PS delivery mode will grow from its current size of $18.8 billion at a CAGR rate of 10%, to $30.7 billion during 1998.

2. Professional Services Desktop Component

The portion of PS involving desktop SI is expected to grow from $5.8 billion to $16.2 billion, a CAGR of 23%. This rate is better than twice as fast as the overall PS delivery mode growth. Desktop SI's share will grow from its current portion of 30.7%, to 53.0% of professional services by the end of 1998.

3. Systems Integration

INPUT projects the overall size of the nonfederal government SI market will grow at a CAGR of 14% from $6.3 billion to $14.1 billion over the next five years. Two factors cause this higher rate of growth when compared with the PS mode: users increasingly favoring this mode and increased vendor SI offerings (i.e., combination of more vendors and more frequent client SI proposals).

4. Systems Integration Desktop Component

INPUT predicted the desktop services portion of SI to be 40.4% or $2.5 billion during 1993. With its projected growth rate of 30% CAGR over the forecast period, 1998 desktop/SI expenditures are expected to reach $9.4 billion in five years. Desktop SI will then be 66.9% of the overall SI market with regard to platform use.

B

User Requirements/Buyer Values

INPUT has determined several characteristics of the market for desktop SI by analysis of active application project data, specific questionnaire responses and interviews with both users and vendors. In combination, this data builds a picture of the existing market—what users look for and expect and some insight into the makeup of the desktop user.

1. Desktop Systems Integration Opportunity Appears Better in Some Industry Sectors

Analysis of INPUT's Leads Database, containing information pertaining to over 2,500 application projects in progress during 1993, leads to several conclusions regarding the apparent use for desktop SI. The data is separated by standard industry sectors and most of INPUTs analysis was done by these sectors.

EXHIBIT II-3

Desktop Systems Integration Status

- Desktop systems are becoming the favored application platform and already predominate in seven of the fourteen industry sectors
- Half of the sectors show much higher use of external services when desktop systems are involved, others display the reverse
- The use of external integrators for desktop systems accounts for over half of three sector's PS/SI external services use

INPUT developed a composite opportunity rating that includes several indicators uncovered during INPUTs analysis of industry sector tendencies regarding desktop SI and the use of external integrators. The results show marked differences between the industry sectors (e.g., utilities and wholesale distribution rate high in opportunity when compared with health services and process manufacturing).

Although INPUT believes the variability between individual companies is probably greater than the variance between industry sectors, the noticeable difference shown between sectors is indicative of potential disparity in vendor opportunity.

2. The Increase in Network Applications is the Primary Reason for Increased Desktop Application Use

When both the vendor and user groups were asked to score the trends that lead to desktop systems, vendors tended to apply higher- and less-spread scores than their user counterparts. The two groups only point of agreement is the increase in available network software. Both indicated this as the principal motivation for both industry and cross-industry applications.

The only other point of agreement was the group's communal assignment of third rank to the increase in business users desire to control their own automation.

The user and vendor groups disagreed when ranking the other reasons for the popularity of desktop solutions. While users ranked downsizing as their joint number one reason, vendors gave that business trend nearly their lowest score.

Similar disagreement is seen with the vendors second trend choice, a lack of internal technical skills, while users scored the trend at the bottom. INPUT believes this difference of opinion relates to the vendors strong feeling that their function is to provide missing skills. Users, conversely, do not feel or like to admit, they lack the skills. Rather, they believe their internal staff is just too busy.

Finally, compliance with standards was ranked low as a trend by both groups.

Beyond the actual trend rankings, and possibly more significant, are the markedly different perceptions of the ordering. INPUT believes vendors, as a group, should strive to better understand the user views that influence their decisions.

3. Desktop Decisions Are Often Made by IS/User Partnerships

INPUT asked both groups to score the most frequent role for IS in desktop decisions. Although users highest ranking has IS in the role of desktop systems implementor, vendors attributed the highest score to IS in an advisory role to the business user client. This difference in vision is really an indication of the increasing tendency for IS and users to work in partnership regarding automation selection. The user expects IS to assure the implementation is done correctly, though the user is the actual buyer.

4. The Role of IS is Undergoing a Change

It is the opinion of the vendor group that the role of IS is changing, particularly with desktop systems. Although a quarter of the respondents indicated no change in the traditional IS role, the rest felt change was occurring. The largest number (43%) thought IS's role was decreasing, while the remaining 32% saw IS's role increasing.

The role of IS is maturing in many organizations and taking on more of a partnership function with the user during purchase decision making. This tends to substantiate the conclusions drawn from the scoring of the most frequent IS role in the prior section. Further, this modified role is most evident in the more business application orientation of desktop environment. If they have not already done so, vendors should take heed and begin to cultivate relationships beyond the IS department.

5. Desktop Buyers Prefer Informal Approaches to Vendors

INPUT asked users how they normally approached vendors for assistance with their recent desktop application situations. The predominate style indicated was the use of an informal request. In only 31% of the cases was the style indicated as a formal solicitation. In addition, the normal number of vendors contacted was three, indicating users reduce their vendor list prior to contact.

6. Users Expect Prior Desktop Experience and Reputation from Vendors

Users unanimously selected desktop systems experience, reputation and prior references as priority attributes of desktop vendors. Rated slightly below was their desire to deal with vendors who have exhibited a broad technical ability. Although price was rated the next consideration and therefore significant, the rating attached to this factor was substantially less than those rated higher.

Users are concerned with the cost of services, but not prior to assuring the credentials of vendors.

C

Vendor Strategies

Direct vendor interviews and questionnaires were the primary sources of strategy information. This data was correlated with expert opinion and user discussions.

Vendors indicated a full 73% of recent application projects involve desktop systems. Further, 56% of their projects are considered SI contract type of projects. INPUT believes this is indicative of the need for vendors to assure their capability to work with desktop systems. Since vendors report they consider more than half their projects as SI, there is a growing trend for users to enter into SI engagements at the desktop level.

1. Vendor Modification of Desktop Systems Averages Less Than 30%

Vendors indicated the modification to application software was generally less than 30% of the total package. No vendor responded with more than 50% that INPUT regards as a requirement for SI engagements. Both vertical industry and cross-industry applications were indicated as having similar change proportions.

The primary reasons for this lower level of modification include; applications software tends to fit user needs, desktop systems commonly provide for easy parameter customization and desktop environments frequently do not offer the space for significant change.

This set of responses reinforced INPUT's belief that desktop systems have several different levels of integration service available and desired by users.

2. INPUT Sees Several Service Levels in Desktop Systems Integration

Although the title of this report could lead the reader to presume desktop systems integration involved only INPUT's SI delivery mode, this is not the case. Desktop systems and their networks have given birth to many varieties of SI services that many times bear little resemblance to traditional SI.

INPUT sees four levels of services that can be accurately called desktop SI. They are; Interconnection, or network integration with no software changes; Implementation, which may include interconnection, but is primarily involved in the installation of standard packaged software; Turnkey Integration, involving the implementation of all hardware and software with limited modifications to solve a business problem; and, Systems Integration, which includes the full INPUT definition of services. Full SI engagements include or provide; substantial package modification or systems development, single vendor interface and requires the vendor to carry the risk for implementation.

Inferred, but also implicit in the differences between the levels, is a general shift from vendors with a technology base to more business-oriented vendors. Though the level definitions are clear, they are really points on a spectrum of services. Exhibit II-4 lists five vendors with the different levels. Each vendor tends to be associated with just one level which is determined by the primary type of service delivered.

EXHIBIT II-4

Typical Vendors by Integration Level

Level	Typical Vendors
Interconnection	Computerland, Sears Business Centers, local network integrators.
Implementation	Computerland affiliates, some software product vendors.
Turnkey Integration	ENTEX (formerly JWP), VAR's (e.g., ASK).
Systems Integration	Big 6's, DEC, EDS, Integris, ISSC, Perot Systems, SAIC, SHL Systemhouse.

3. Service Level Migration is a Primary Vendor Strategy

As evidenced by the entries in Exhibit II-4, the companies involved in desktop SI are a diverse group. Each level has been generated to meet the needs of the collective community of users that, in many cases, were not addressed by those already in the business of desktop integration.

Although the general trend in migration is to move to higher levels by adding service capability, migration downward, or staying in place while others move upward, may be an envisaged strategy. To accomplish a downward migration, a vendor would consolidate their activities on their core business offerings, while expanding their client base. An example might involve a vendor becoming a major subcontractor in a specific technology niche.

The more common level migration is upward as vendors are both pushed and pulled to add solutions. They are being pushed to increase their services by; users asking for more than technology solutions, IS departments that have downsized or do not have desktop expertise and the shrinkage of profits due to increased competition. The forces pulling them upward include; expanded desktop application capabilities, the desire to pickup business they leave behind and the establishment of long-term growth direction.

4. Most Vendors Target Large Customers

Almost universally, vendors target their market strategies at the large Fortune 500 and 1,000 businesses. This strategy is sound, and indeed, larger companies tend to spend more on automation. However, if all vendors target only large companies they all compete for the same market and leave the market for smaller company businesses open.

Significant opportunity will exist within all business sizes based on the nature of the systems and the universal need for integration assistance. Providing services in the less competitive, smaller company market is where many vendors begin their business.

5. Some Vendors Stick to Specialized Business Niches

These vendors focus on providing integration support based on a particular software, equipment or business function expertise. Building a business on a specific proficiency can be tenuous, because there is a dependency on the primary suppliers ability to keep up with technology. Additionally, some primary vendors may decide to enter the integration business directly. However, there are many small companies that thrive in their niche.

INPUT believes those who concentrate on a business function can build a client base on reputation and can avoid the pitfalls of specific vendor alignment. The most obvious of these is desktop cross-industry applications (e.g., accounting, human resources, etc.). When these applications were based in larger platforms, they were the target of traditional SI vendors. However, the advent of these applications for the desktop environment has brought the power, and the integration problems, to smaller companies.

6. Subcontractor Opportunities Are Biggest in Training and Systems Software Modification

Vendors ranked a list of potential subcontractor functions for relative opportunity, based on their company's needs. Like all external services contracting, subcontractors are hired because the company does not have qualified staff for the specific need or they require supplemental assistance. Hence, the vendor ratings reflect the areas within our vendor group where staff shortages tend to exist.

The functions ranked from highest to lowest are: education and training, systems software modification, site preparation, voice communications services, application software modification, equipment modification and special equipment development. The key to subcontracting strategies is the establishment and nurturing of affiliations with appropriate vendor-clients.

D

Keys to Success in Desktop Systems Integration

Although the report provides specific success factors for the different strategies discussed in Chapter IV (i.e., migration, technology orientation and product niche), there are some factors that transcend specific strategies. INPUT believes the factors listed in Exhibit II-5 are central to success in desktop SI.

EXHIBIT II-5

Keys to Desktop Systems Integration Success

- Establish a staff orientation to solve business problems
- Be prepared to market to the non-IS client and be flexible
- Stay technologically current
- Build and nurture alliances
- Broaden client base and penetration

Although modifying vendor staff to view their role as business problem solvers is of primary concern for the upwardly mobile migrator and the product niche vendor, it is important for all desktop systems integrators. Users look for more than just linking it all together, they expect the implementation to resolve their business issues.

The partnership of IS and the user to make desktop SI decisions, will require different marketing skills and approaches than were needed to sell to either of these entities separately. This will demand more flexibility from marketing and delivery staff. Some vendors will find this factor forcing staff changes to achieve proper results.

Remaining technically current has never been an easy task, even for technology-oriented vendors, but it is necessary. Vendors must keep up to date and be able to discriminate among the competing directions, both new and old. Part of a vendors function is to be the source of honest and accurate information for their clients. Even the business-oriented firm must be technically astute, particularly with the need to address the growing user/IS partnership.

Maintaining sound, mutually beneficial alliances is fundamental to the growth of a vendor's business. Some vendors find appropriate affiliations allow them to build their business with reduced, direct-marketing expense. Many alliance partners will provide leads, training access, current product information and competition data to their partner vendors.

Although this period of slow economic growth in the world may not seem like the time to grow, INPUT sees this as the time to expand for desktop SI vendors. Vendors should make the most of this opportunity to participate in the growth of this rapidly expanding services market.

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III

User Requirements and Analysis

A

Analysis of Opportunity Data

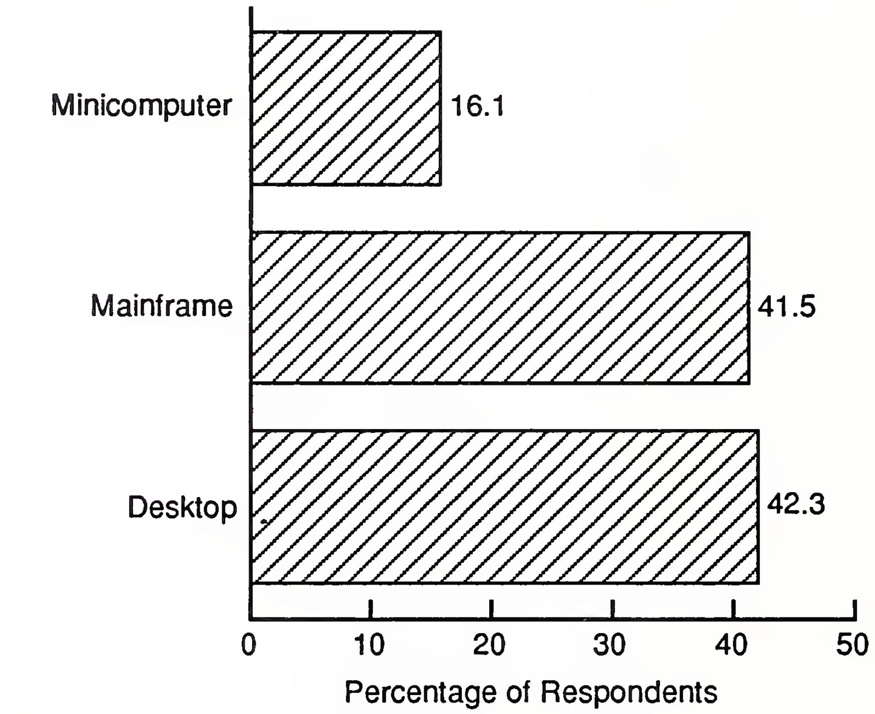
INPUT has created, and maintains, a base of data regarding application system's work being conducted by various business and government entities from all areas of the U.S. The INPUT Leads Database contains information on more than 2500 application systems divided by standard industry sector classification, see Appendix D - Industry Sector Definitions. Relevant to this research study, is the material extracted concerning two delivery modes: systems integration (SI) and professional services (PS) and systems where a desktop platform is indicated. Professional services has been included in most phases of this analysis, since that delivery mode is part of all SI engagements and INPUT's strict definition of SI could eliminate many instructive desktop relationships.

The full database contains application system entries collected by INPUT through questionnaire responses and interviews with project managers at various businesses and government agencies within the U.S. The data is current, having been collected during 1993 as part of INPUT's continuing process of data gathering to support its goals related to the delivery of up-to-date market information.

1. The Desktop Platform

EXHIBIT III-1

INPUT 1993 Sample, Application Systems Portion by Platform Type



When considering all application systems projects from businesses INPUT polled during 1993, those indicating desktop as the platform reported the highest proportion of the three (42.3%), though only marginally higher than mainframe systems (41.5%), and the smallest number reported was for minicomputers (16.1%). Though the small percentage allocated for minicomputers may come as no surprise, the minimal difference between desktop and mainframe platform types may not be as expected. As one interviewed vendor remarked,

"I am surprised at the low number (for desktop). I believe that almost all of our projects include a desktop component."

INPUT views this as an issue of definition. Those businesses contacted for application platform responded with the primary platform for processing, while others view any system that has attached PCs as one with a desktop component. Though both are correctly called desktop, the focus of this report in platform terms is on systems that satisfy INPUTs opening definition and provide primary application processing within the desktop unit. In fact, this increases the significance of INPUTs findings. Of our sample, most applications are being implemented on desktop platforms.

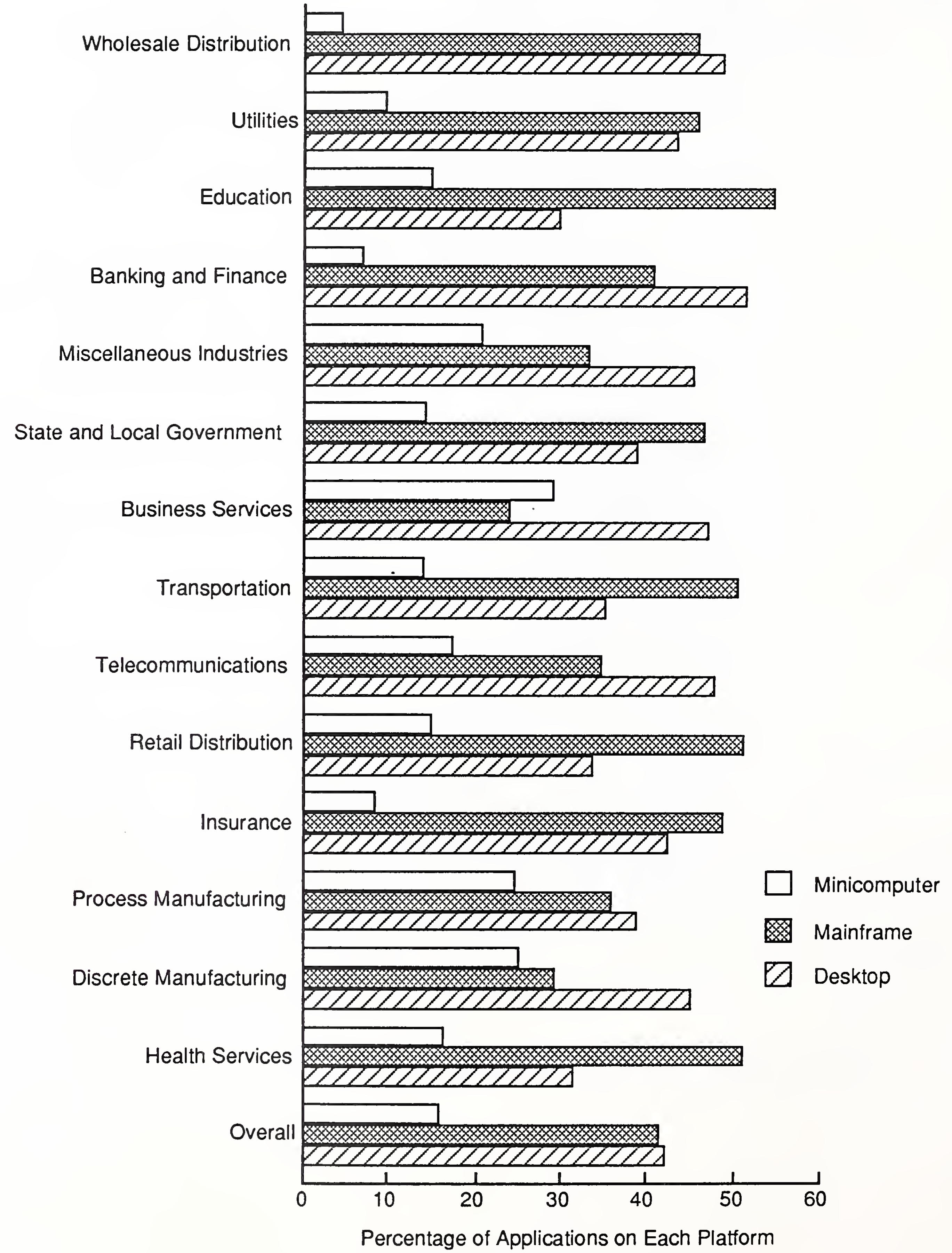
The current definitions for the three platform types (i.e., desktop, mainframe and minicomputer), are not consistent. Minicomputer installations can be classed as mainframes by respondents, particularly if they are confined within restricted computer rooms. Projects listed as desktop may include either platform type within their network, yet be reported by the respondent as a desktop system. Traditional platform typing may have been categorized by the style of system operation rather than the INPUT standard definitions which are related to system cost. For this study, INPUT used the respondent platform classification.

Regardless of the potential confusion regarding platform type, desktop systems are the growing trend. Further, the continued use of mainframe solutions by some industries and businesses relates to the potential of available equipment capacity and the absence of factors that promote desktop migration.

Exhibit III-2 graphs the proportional use of platforms in application projects, separated by industry sector (see Appendix D for sector descriptions). The three platform types are graphed in the order: desktop, mainframe and minicomputer for each of the industry sectors.

EXHIBIT III-2

Platform Choice by Industry Sector



Our sample of application implementations by platform type, exhibits some activity for each of the three platform types in each industry sector. However, the platform preference is different between the sectors and the strength of that preference in almost all sectors is notable.

Exhibit III-3 itemizes the predominant platform used by application projects within each industry sector as indicated in Exhibit III-2.

EXHIBIT III-3

Predominant Platform by Industry Sector

	Predominant Platform
Banking and Finance	Desktop
Business Services	Desktop
Discrete Manufacturing	Desktop
Education	Mainframe
Health Services	Mainframe
Insurance	Mainframe
Miscellaneous Industries	Desktop
Process Manufacturing	Desktop
Retail Distribution	Mainframe
State and Local Government	Mainframe
Telecommunications	Desktop
Transportation	Mainframe
Utilities	Mainframe
Wholesale Distribution	Desktop

Though the overall margin of difference in predominant platform in Exhibit III-1 is marginal between desktop and mainframe (42.3% to 41.5%), the detail by industry sector displays more marked separation. Of the 14 standard industry sectors, eight show higher implementation of mainframe-based application systems, with four at greater than 50%: education (55.0%), health services (51.4%), retail distribution (51.2%) and transportation (50.7). Desktop is the favored platform for the remaining six sectors. However, only in banking and finance does the proportion exceed 50% (51.7%). In only one sector do minicomputers even reach second place, with business services companies reporting 29.0% minicomputer verses 24.0% for mainframe and 45.3% on desktop platforms.

INPUT believes the trend of favoring desktop platform solutions will spread to all industry sectors in the short term. In addition, minicomputer and mainframe platforms are increasingly becoming connected in desktop-based network business processing solutions.

2. Professional Services and Systems Integration Delivery Modes

INPUT's application database was queried for the use of both PS and SI delivery modes. Exhibit III-4 provides a baseline view of the use of each these two delivery modes and a total, combining both delivery modes, for all applications in our sample, by industry sector. The percentage indicates the proportion of application projects done within that sector using the particular external integration service mode.

EXHIBIT III-4

SI and PS Use by Industry

	SI (Percent)	PS (Percent)	Both (Percent)
Banking and Finance	10	22	33
Business Services	26	41	66
Discrete Manufacturing	4	11	15
Education	0	4	4
Health Services	13	44	57
Insurance	3	6	9
Miscellaneous Industries	38	45	83
Process Manufacturing	3	12	15
Retail Distribution	19	40	60
State and Local Government	27	42	69
Telecommunications	31	38	69
Transportation	14	41	55
Utilities	18	19	37
Wholesale Distribution	6	29	36
Overall	12	24	36

Overall comparison of the use of these two delivery modes by our sample businesses, shows the PS delivery mode is used about twice as frequently as SI. However, with the exception of three sectors; banking and finance, insurance, and retail distribution, the sectors do not follow the doubling rule. Business services, miscellaneous industries, state and local government, telecommunications and utilities display a greater tendency to use SI services than half the PS portion. The remaining six sectors exhibit a lower propensity to SI use than the overall average.

Also obvious within the sample is the below-average use in some sectors of either the SI or PS delivery modes. Five sectors exhibit this tendency to lower use of these external services: banking and finance, discrete manufacturing, education, insurance and process manufacturing. Finally, two sectors are unique in their proportional use of these delivery modes; utilities has a relatively high use of SI, while a less than average professional services use, and wholesale distribution has an above average use of PS and one of the lowest SI percentages.

3. Desktop Systems Integration

This section addresses the combination of two dissimilar entities, delivery modes and a platform type. To achieve this, it is necessary to contrast the potential for SI and PS vendors to work on all projects, with the potential for external vendors to work on projects involving desktop platforms.

Exhibit III-5 illustrates the result of this segmentation. The column headed “Universe” displays the percentages, from Exhibit III-4, of all proposed projects that are expected to make use of SI and PS vendors. The column headed “Desktop” shows the percentage of desktop-based projects that are expected to make use of these vendors. For example, the exhibit indicates that within the Wholesale Distribution market, there is a greater potential for business when focusing on desktop systems. Only 36% of all projects will use SI and PS vendors, whereas 50% of desktop projects will use these vendors.

EXHIBIT III-5

Comparison of PS/SI Project Portion with and Without Desktop

	Universe (Percent)	Desktop (Percent)
Banking and Finance	33	33
Business Services	66	62
Discrete Manufacturing	15	14
Education	4	8
Health Services	57	40
Insurance	9	6
Miscellaneous Industries	83	92
Process Manufacturing	15	15
Retail Distribution	60	59
State and Local Government	69	71
Telecommunications	69	44
Transportation	55	64
Utilities	37	50
Wholesale Distribution	36	50
Overall	36	39

Though the overall PS/SI delivery modes' percentage is higher for desktop platform projects than that of the sample universe of projects, INPUT does not view the 3% difference as significant as compared to the differences within some sectors. Eight industry sectors had a movement greater than the 3% overall change. Five sectors show greater than average usage when desktop is involved: education (+4%), miscellaneous industries (+9%), transportation (+9%), utilities (+13%) and wholesale distribution (the largest +14%). Three display a negative shift, when desktop is involved, of greater than 3 %: business services (-4%), services (-17%) and telecommunications (-15%).

INPUT believes factors specific to a sector can explain some of the differences. Examples for two specific situations can be cited. Whereas, software has and is being created for most standard industry sectors, the mix of different businesses within the Miscellaneous Industry sector has not tended to attract developers. Hence, they turn more frequently to external integration service providers for customized solutions. These factors yield their extremely high overall usage, 83% of all projects and 92% of those indicated, as desktop.

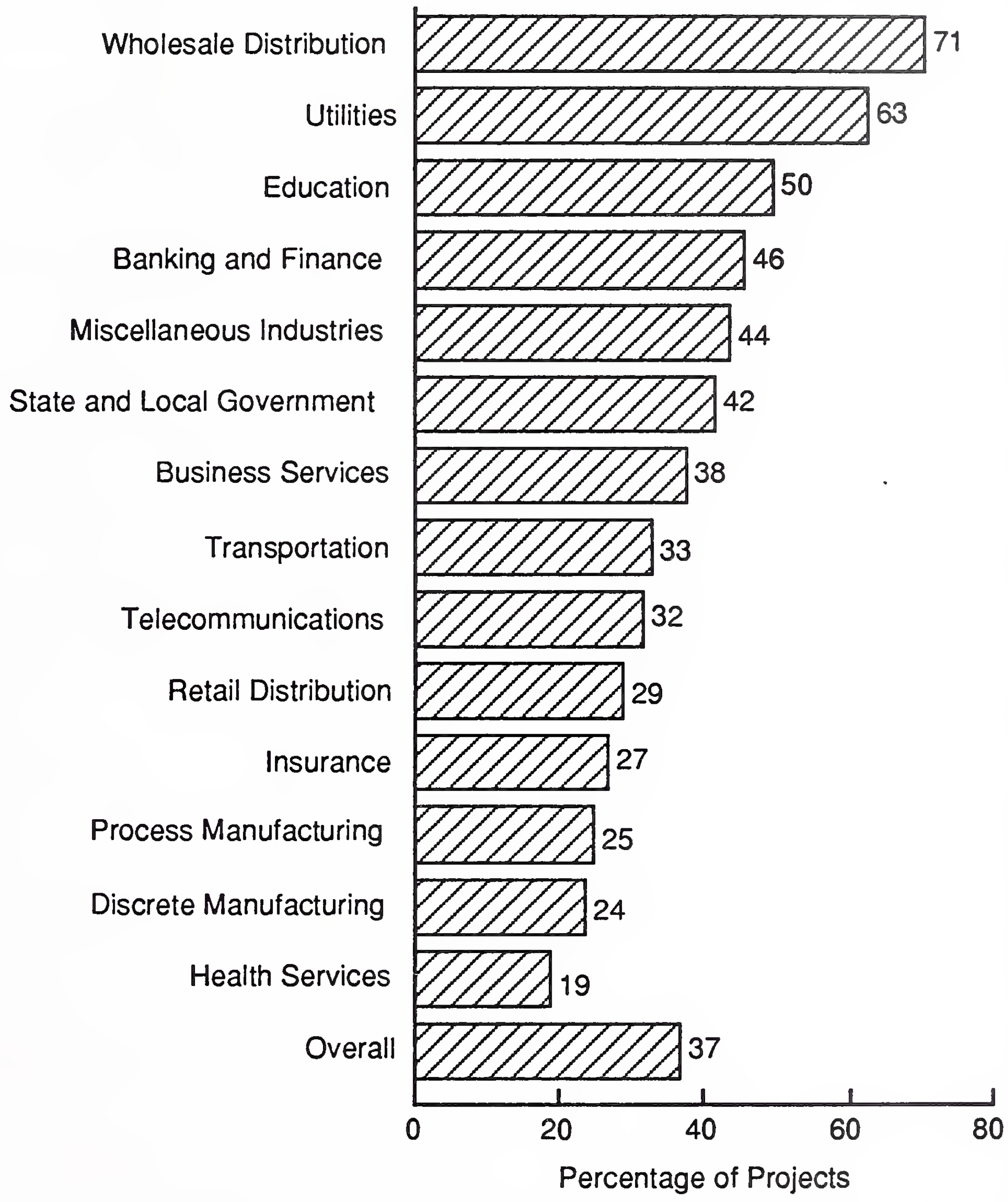
Telecommunications businesses are also different from other sectors because they are technology-based businesses with a high, technical staff level relative to other sectors. In addition, they are currently involved in a volatile marketplace where technology is a competitive weapon. For competitive reasons and greater internal staff capabilities, telecommunications shows a lower use of external integration vendors.

Finally, by isolating the projects indicated as done with external integration assistance (both PS and SI delivery modes), analysis of the impact of the role of desktop integration projects becomes more apparent.

Exhibit III-6 displays the proportions within the sectors ordered by descending usage. The percentage indicates the proportion of all external integration projects within a sector that involve desktop platforms. For example, 71% of the external integration projects in the wholesale distribution sector, use a desktop platform.

EXHIBIT III-6

Desktop/PS/SI Projects as a Portion of All PS/SI Projects



This analysis is not significant in its overall proportion (37%), rather the range of percentages between the sectors is notable. The majority of the application system projects in three of the sectors are desktop systems; wholesale distribution, utilities and education. Industry sectors at the high end of this chart are more likely to use external integration providers for desktop systems than those at the low end. Additionally, the variation from 71% for wholesale distribution to only 19% in health services is very wide.

The conclusion this presents is the use of desktop systems does not appear to increase the general propensity to use external integration service vendors, nor does the use of external integration vendors increase the use of desktop system solutions. However, those at the high end of Exhibit III-6 would seem to defy this conclusion.

Exhibit III-7 reinforces the point made in Exhibit III-6 showing the percentage of variation within a sector's external integration use for desktop systems projects. The percentage is the difference between the use of external integration services in all projects and the use of external integrators for desktop projects, (i.e., the wholesale distribution overall use is 35%—71% with desktop, yielding a difference of 35%).

EXHIBIT III-7

Comparison of Use of DT/PS/SI as Part of Overall PS/SI

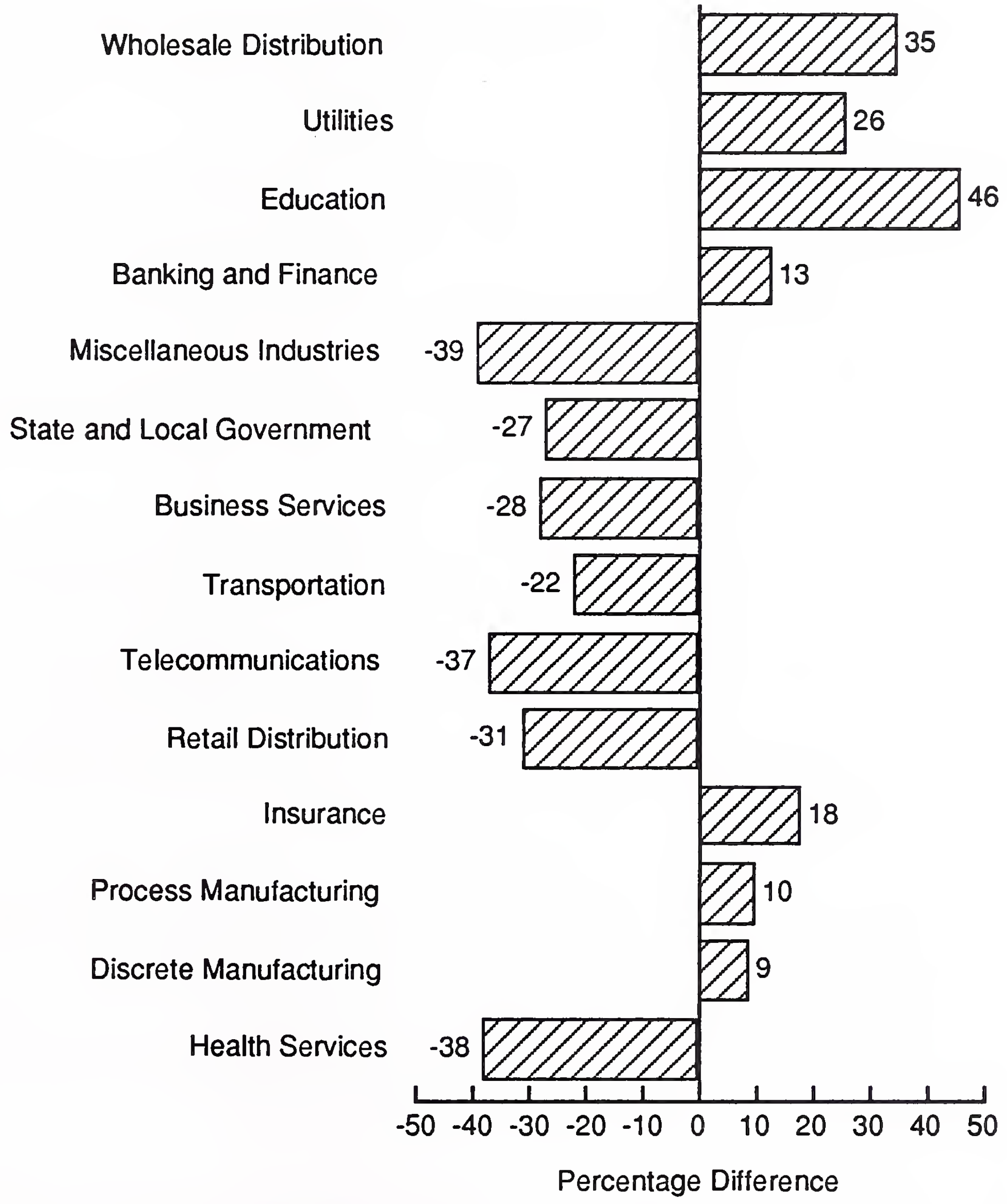


Exhibit III-7 shows an even split with seven increasing and seven decreasing. Those that increase show a greater tendency to use external integrators for desktop systems. Those that display a decrease appear predisposed to do their own integration projects. In fact, the chart shows most sectors far from the center in this regard.

4. Conclusions within Opportunity Data

Analysis of the INPUT Leads Database of application projects indicates the desktop platform as the marginally, predominant platform overall and the preferred solution by six of fourteen standard industry sectors. This is only the beginning and desktop platform solutions will dominate the other two platform types in all industry sectors in the near future.

INPUT's delivery mode reports show the SI style of contracting for systems implementation continues to show strong growth, relative to less complete PS offerings. This report's analysis determines significant differences in the use of both these delivery modes by industry sector. Though our sample showed SI used about one-half of the PS frequency, five of fourteen sectors displayed a significantly higher tendency to use SI, and six a lower-than-average usage.

Desktop platform project use of the combined PS and SI delivery modes were shown to be slightly higher than the overall use of SI in our sample. However, desktop system projects are a very large portion of the total sample's PS/SI use within some industry sectors. In fact, in three of the fourteen industry sectors, the DT/PS/SI proportion of total sector PS/SI use was greater than half their PS/SI usage.

INPUT's final opportunity data comparison (Exhibit III-7) shows the dramatic swings in the use of PS/SI external services when desktop systems are involved. Half the industry sectors displayed a significant increase in use, while the other half showed an even more significant trend to not use external integrators for their desktop situations.

Based on the combination of this opportunity data derived for our sample group of application projects, INPUT developed composite ratings for each industry sector's propensity to use desktop systems (Exhibits III-2 and III-3) and external services for integration (Exhibits III-4 through III-7). Exhibit III-8 shows these ratings on a five-point scale, where 5 means a high potential and 1 means a low potential.

EXHIBIT III-8

INPUT Ratings of Industry Sector Potential Opportunity

	Rating
Utilities	4.2
Wholesale Distribution	4.2
Banking and Finance	3.8
Miscellaneous Industries	3.8
Business Services	3.4
Education	3.2
State and Local Government	3.2
Telecommunications	2.8
Transportation	2.8
Discrete Manufacturing	2.6
Insurance	2.4
Retail Distribution	2.4
Process Manufacturing	2.2
Health Services	1.6

Ratings more than three are considered above average in the use of desktop and/or external integration services. Although the variation between individual companies may be a better predictor of opportunity, the substantial differences between sector ratings could be an important guide for vendor assignment of resources, (i.e., utilities has greater potential for business than health services).

Utilities and wholesale distribution share the highest rating based on their high use of external integrators when desktop systems are involved. Although application projects in utilities shows a mainframe preference, while wholesale distribution prefers desktop, the platform preference for each was marginal.

Banking and finance's rating of 3.8 is indicative of a significantly higher-than-average opportunity. This sector's projects showed a high preference for desktop solutions and average for general external integrator use. However, their external integration use was reported as above average for desktop projects.

Miscellaneous industries was tied for the second highest rating, but attained this rating for different reasons. This sector was rated well-above-average in desktop preference and general external integrator usage. The sector also reported increased external service use in desktop projects, but had the highest negative ratings decrease in external integration use with desktop projects. INPUT believes their very high use of external integration services on all projects left little room for growth. However, since their reported tendency was so much less than other sectors on this category, their rating is felt to be appropriate.

Business services attained its fifth highest rating based on the sector's high preference for desktop solutions and high general use of external integration services. However, their less-than-average ratings in external integrator use in desktop situations, yielded the slightly lower rating. They should be a good desktop SI target.

Education displayed the lowest use of desktop of any sectors' application projects and was low-rated for their general use of external integration services. However, their use of external services ranked very high in their desktop-oriented projects.

State and local government shared the 3.2 rating with education. This sector shows a high rating for use of external integration services and above average for high external use in desktop projects. Their strong preference for mainframe solutions in our sample and limited increase in external use in desktop projects, were factors that lowered the sector rating.

Telecommunications 2.8 rating places them just below-average in INPUT's opportunity ratings. This sector is a high-level desktop systems user and external integration service user. Their lower rating was caused by their apparent, and previously mentioned, tendency to not use external integrators in desktop projects.

Transportation, also rated at a 2.8 opportunity, does not show appreciable increase in external integration use in desktop situations and reports high mainframe preference. Their overall opportunity rating was attained by their above-average external integration service usage.

Discrete manufacturing, down two-tenths rating points from transportation, reported generally lower external integration service use with desktop projects. However, their high use of desktop solutions and average increase in external integration service use in their desktop projects yielded this opportunity rating.

Insurance is rated at a 2.4 opportunity. Their projects showed a preference for mainframe solution and their tendency to not use external integrators was the cause for this low rating. Their rating was substantially raised by the fact they show a marked increase in external integration service use with desktop projects. This could be construed to indicate their lack of internal staff to deal with desktop projects.

Retail distribution's rating was tied with insurance's rating. Their projects displayed relatively high mainframe preference and high, general, external integrator tendencies, similar to transportation sector projects. However, they showed a decrease in external use with their desktop projects.

Process manufacturing displayed similar ratings to discrete manufacturing. This sector's lower rating was caused by their lower use of desktop solutions as a portion of this sectors sample projects.

Health services achieved the lowest overall rating, although their projects showed an above-average external integration service use, based on their low ratings in all other rating categories. This may change when desktop solutions become more popular in this sector.

B

User Needs Analysis

Since INPUT's analysis of sample application project data indicates substantive variation in both desktop and PS/SI use, questionnaires were distributed and interviews conducted to determine more detailed information. The research probed for; the relationship between business trends and desktop systems, the role played by IS in desktop decisions, how users approach vendors and what users look for from desktop vendors.

1. What are the Business Trends That Promote the Use of Desktop Systems?

Questions were asked during interviews of both users and vendors, to determine if there was agreement with INPUT's expectations between the dissimilar groups. Both groups were asked to rank the significance of five business trends critical to the growth of desktop systems popularity. The scale ranged from 1 to 5, where 5 was extremely important and 1 not important.

EXHIBIT III-9

Trends That Lead to Desktop Systems

	User Score/Rank		Vendor Score/Rank	
Increase in network applications	4.6	1	4.7	1
Downsizing	4.6	1	4.1	3
Business users control of automation	3.8	2	4.3	2
Compliance with standards	3.6	3	4.0	4
Lack of internal technical skills	3.4	4	4.7	1

Both groups agreed the following were the key business trends—no new entries were mentioned nor were any “not important” responses recorded. However, there was no unanimity in the group’s rankings and with the exception of one trend, little similarity in the scores. Overall, the vendor group tended to give higher ratings (average 4.4) when compared with the user group scores (average 4.0).

The increase in the availability of quality application solutions for network environments was the only agreed trend being both number one-ranked and similarly rated by the groups. INPUT agrees this is a primary reason among a list of primary trends—business solutions that work in the less expensive and more easily implemented desktop platform.

The desire of business users to take control of their automation needs was ranked the same by both groups as second, behind two first choices.

The lack of internal technical skills was tied for number one on vendor replies and ranked lowest by users. This is an understandable discrepancy. Vendors perceive themselves as supplying specialized, technical expertise to clients. Users, particularly those with IS backgrounds, are not accustomed to considering external services, such as adding absent skills, nor do they readily admit to the lack of skills as a causative factor.

Downsizing was defined during interviews as the business issue, rather than the computer platform variety, and was ranked number one by users and number three by vendors. This difference can be justified by the fact that users see and feel this sort of business pressure. Vendors, though they understand the trend, may not appreciate its significance in promoting the shift to desktop systems. The pressure of downsizing, that places more duties on each individual worker, increases the demand for computer power to alleviate many tedious tasks. Desktop system networks also allow a better flow of information to the empowered worker and allows a smaller management core to control their actions.

Compliance with standards, the final trend question, was ranked higher by the user group than the vendor group. Vendors should be aware they may be stepping into situations where standards are an issue. INPUT believes this is, or will become, an even more significant issue as more IS departments begin to address the standards problem at those businesses with a history of individual PC purchasing.

2. What is the Role of IS in Desktop Systems and is It Changing?

Because the desire of the user for increased control of automation is one of the primary trends, is there an impact on the IS role in the desktop system purchase? Exhibit III-10 combines the responses of both the vendor and user groups regarding the role of IS departments.

EXHIBIT III-10

IS Role in Desktop Systems

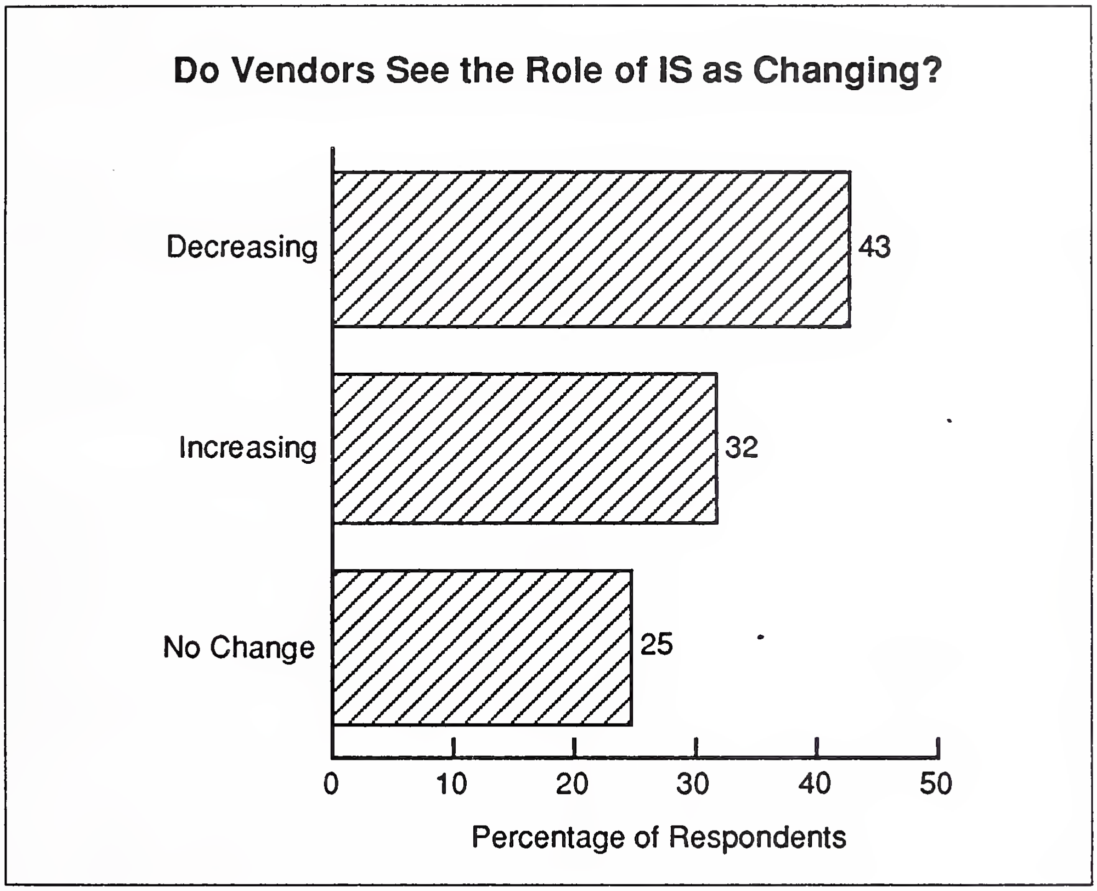
	User Score/Rank		Vendor Score/Rank	
Systems implementor	3.5	1	2.5	3
Direct buyer	3.2	2	2.7	2
Advisor to user buyer	3.0	3	3.3	1
Minor involvement	1.5	4	2.3	4
Not involved	1.0	5	1.7	5

The low scores and lack of a predominant role, is indicative of mixed IS roles in desktop situations. Although the order of the rankings is seen differently by the two groups, there is a basic similarity that shows IS as generally involved in desktop decisions. The difference is in the most commonly played role.

Vendors chose the most common role; advising the user during the system purchase. The user group indicated the most prevalent role—system implementor. However, the actual purchase decision appears to be spread between IS and user management based on the close scores for the number two and three user rankings.

Both groups scored those roles, indicating the lowest level of IS involvement, in the same order, minimal and no involvement. In these cases, vendors chose to note some incidence of these levels, while users mentioned almost none.

EXHIBIT III-11



The vendor group indicated a mix of trends for the role of IS regarding desktop systems. Although the largest, single response denotes a decreasing role, the combined total with an increased or unchanged role is larger, (57%).

INPUT recognized a dichotomy in the details of the responses. Vendors who have traditionally worked with IS management (like ISSC and EDS) claimed the IS role was increasing, while those whose history is more business oriented (Anderson Consulting and Hunter Group, a small cross-industry software implementor), indicated a decreasing interest for IS.

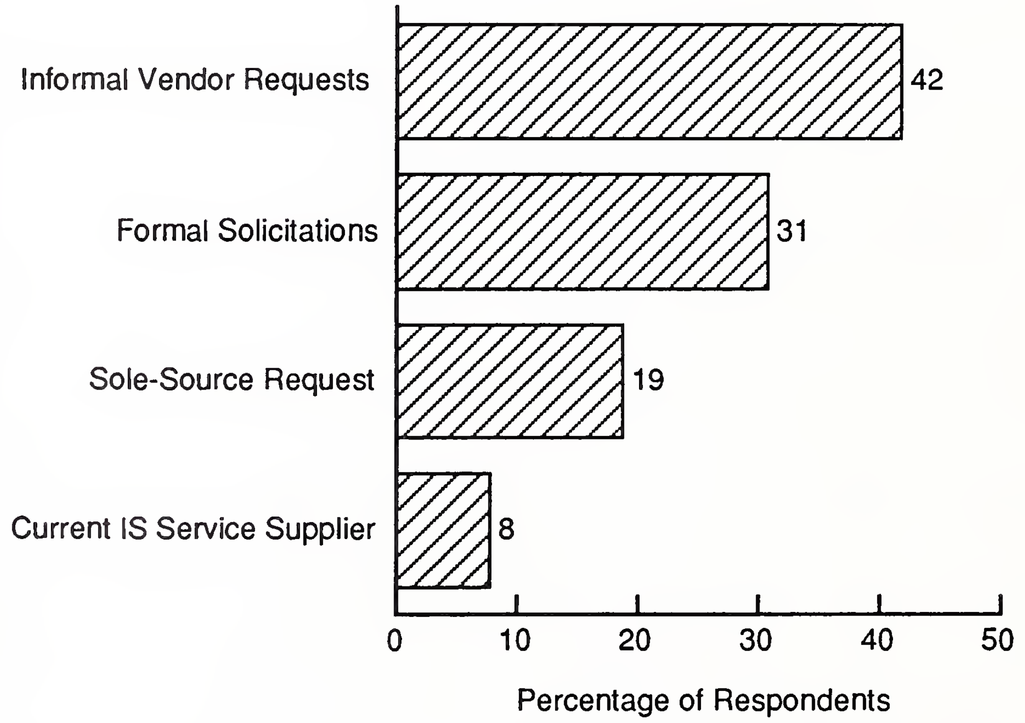
This mixed response is indicative of the increasing control of the user in automation decision making and the evolution of IS departments into a partnership arrangement with the user buyer. INPUT believes vendors should prepare for these changes and expand their client contacts to compensate.

3. Users Generally Approach Desktop Systems Vendors Informally

Exhibit III-12 shows the result of user interviews regarding their methods of approaching desktop vendors for assistance.

EXHIBIT III-12

Common User Approaches to Desktop Systems Vendors



Interviews found the predominant style of vendor request to be "informal" and addressed to a small number of vendors (usually three). When the proportion specifying informal style is combined with nonformal question responses (sole source and current supplier), the result shows vendors are generally not confronted by formal solicitations.

The use of formal solicitations is found with organizations accustomed to that style, such as government agencies. Additionally, a formal path may be favored for applications with a lack of package or vendor familiarity. Within the user group, there are several competing products and the resulting system is a complex combination of applications.

4. Users Look to Experienced Vendors for Assistance

Users universally cited desktop experience, prior reputation and references as the primary factors in vendor selection. Exhibit III-13 shows the user interview responses regarding user expectations A scale from 1 to 5 was used, with 5 being very important and 1, unimportant.

EXHIBIT III-13

What Users Look for in a Vendor

Vendor Characteristics	Relative Importance on a Scale of 1-5
Experience with desktop systems	5.0
Prior references/reputation	5.0
Breadth of technical ability	4.8
Price of services	3.9
Vendor financial condition	3.6
Number of customers	3.4
Vendor size	3.2
Single source for full system solution	3.0
Vendor independence	2.4

Overall, with the exception of the lowest-rated factor, everything was rated as important by the user group.

Desktop experience, reputation and references are the user prerequisites for desktop systems vendors. When these issues are joined with the informal approaches commonly used as evidenced by Exhibit III-12, a vendor must exhibit these characteristics just to get an opportunity to bid.

Running a close third is the response, breadth of technical ability. Though this may be seen as a parallel to desktop systems experience, INPUT believes this response is indicative of the respondents concern for the vendor's capability to deal with the broader technology issues that may be presented during an implementation. In essence, they do not want to be involved with a vendor who might be unable to rapidly resolve all technical problems.

A statistically distant fourth, is price of services. Although the user group indicated price as a significant factor, it alone is not an initial issue. This would relegate the role of price as a determinant issue to situations where the higher-scored factors are perceived as equal.

Three factors denoting general vendor strength are rated below price and ahead of the factor considered the key to SI contracts, sole source for the full-system solution. The weight of the sole source factor is related to the complexity of the system implementation and this rating is reflective of the mix of desktop systems within the user group.

5. Conclusions

Vendors need to improve their understanding of users, particularly based on the changes and differences noted in interview responses.

Although both vendors and users agreed on the important issues currently driving the choices of desktop systems, their specific ratings were quite different.

Responses regarding the role of IS in current desktop decisions displayed differences based on the view of the two groups (i.e., users rated IS as more central to the decision than did vendors).

The vendor group was also quite mixed in their opinion regarding the changing role for IS. Is it increasing, decreasing or staying the same? Although the largest single reply was decreasing, the combined two, more positive, indications were greater. INPUT believes the role of IS is changing and vendors should become more proficient in their ability to market to both IS and business users. This is particularly critical since informal styles of vendor selection predominate in the desktop environment.

IV

Vendor Strategies

INPUT's research with various vendors has determined several different strategies that are operative and could guide vendors to expand their existing franchise and enter new areas of the desktop systems integration (SI) business. This chapter explores different desktop integration service levels, extracts and explains several strategies, and provides examples of representative projects.

A

Vendor Desktop Systems Integration Perspectives

Several areas of strategic interest were identified within the responses during vendor discussions regarding their perceptions of the market for desktop systems external integration services. Two initial areas involved their views of the amount of desktop systems they are doing with their clients and the amount of software modification that seems customary for this type of project.

1. Vendors Report High Proportions of Desktop and SI Business

Vendors indicate that desktop components are part of most implementations. The average reported was that 73% of all projects contain some level of desktop system.

Additionally, vendors see the majority of their desktop projects (56%) as SI projects.

Together these results indicate that desktop systems are a very big entity and that integration assistance is a common client request. These levels do not necessarily conform to this report's definitions for desktop or SI. However, they are indicative of the current vendor business environment:

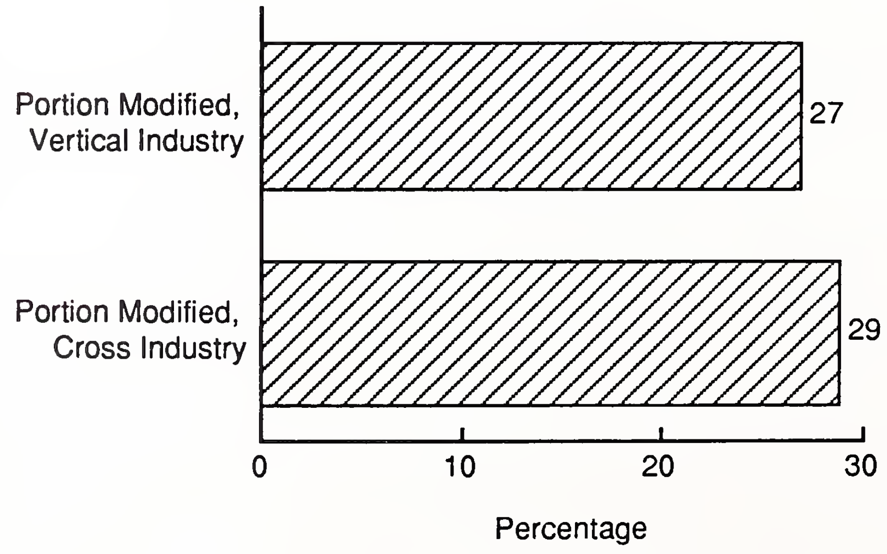
- SI vendors must be capable of desktop systems ventures to survive.
- Desktop-oriented vendors could extend clients into SI type engagements.

2. Vendors Report Lower Levels of Software Modification with Desktop Systems

INPUT's definition of SI includes the prerequisite that software be modified at least 50% to be considered SI. Though this definition was explained to vendors, their responses to two areas of questioning confirmed that desktop/SI does not necessarily conform to the INPUT definition. Exhibits IV-1 and IV-2 explore the modification factor.

EXHIBIT IV-1

Vendor Desktop Systems Modification Proportion



Though the question anticipated differences between vertical industry and cross industry applications, the responses did not show a marked difference. However, these reported percentages are significantly different than the proportion INPUT normally associates with SI (i.e., 50%). Yet vendors call these SI projects, a fact that can be instructive for desktop vendors.

This low-level of software modification is endemic to current desktop systems.

EXHIBIT IV-2

Vendor Indicated Causes for Low Desktop Modification Level

- Application software tends to fit users needs quite well
- Desktop systems tend to be easily user-customized, based on parameters
- There is less room for modification in a desktop environment

The causes for lower modification levels indicated by vendors make an interesting statement about two quality aspects of desktop application software products and current limitations in desktop equipment. The two positive software comments indicate that, at least some, software products are well designed and readily permit user modification. The final comment regarding a desktop system weakness may be a temporary issue, since much of the computer hardware industry is focused at environment expansion.

B

Levels of Integration Service

INPUT has generated four levels of service that are considered desktop integration to assist in exploring the changing fabric of this market. Though the number could be six or eight, four is sufficient to explore the differences and commonalities among the offerings. The purpose is to identify the features, provide an explanation of each, and then explore how vendors can migrate.

Level 1, Interconnection - This is the domain of the standard network connector where the scope of system design work is minimal. They may be referred by a network system software supplier, work as subcontractor to other levels or be contacted directly by clients. This is the baseline level of connection service that may be supplied through an equipment store (actual vendor may be a subcontractor to the store) as part of equipment/network system sale.

Level 2, Implementation - The results of this service level range from Level 1-type interconnect service to assistance with the setup of prepackaged application software. Their clients come from the same sources as Level 1, with the addition of business referrals. The major difference with Level 2 is their capability to offer limited professional services within the confines of their experience. Some would be classed as application software suppliers, who either do the installation or identify the issues and are affiliated with a higher level of integrator.

Level 3, Turnkey Integration - This is more the type of services supplied by a value-added reseller (VAR) e.g., a turnkey solution. They may be called as the integrator after the client has made solution decision, the subcontractor for integration of a full-systems integrator (Level 4) or follow a front-end professional services contract. The major difference from the Level 2 is their ability to modify the software to fit the client. Their difference from Level 4 is primarily that they stick to the specific application and do not necessarily take the lead role for suppliers of other pieces of the solution, nor do they take full implementation responsibility.

Level 4, Systems Integration - This is the true INPUT definition of SI services that features major modification or system development and sole user interface (where they take the risk for full implementation). The client is almost always a deeply involved business person, since the SI vendor will supply the full automation solution. IS involvement in Level 4 situations is more often as advisor to the user buyer, though this may change over time and be considered an IS outsource avenue. Additionally, regardless of the direct staff involvement of the SI contractor, they are the vendor/client interface for all aspects of the solution implementation.

Movement from level to level is practical and will occur as lower-level practitioners add the needed skills or affiliate with other vendors to progress up the integration ladder.

Exhibit IV-3 is a graphic presentation of the service components generally offered by vendors practicing at one of the four service levels.

EXHIBIT IV-3

Integration Service Levels

Service Component	Service Level			
	1	2	3	4
Equipment				
Information systems	X	X	X	X
Communications	X	X	X	X
Custom	N	N.	N	X
Software Products				
Systems software	X	X	X	X
Application software	O	X	X	X
Professional Services				
Consulting	N	O	X	X
Feasibility and trade off studies	N	O	X	X
Selection of equip., network and software	N	X	X	X
Program/project management				
Design/integration				
Systems design (within scope)	X	X	X	X
Install of equip., network and software	X	X	X	X
Demonstration and testing	X	X	X	X
Software development				
Modification of software packages	N	N	X	X
Modification of existing software	N	N	N	X
Custom development of software	N	N	N	X
Education/training and documentation	O	X	X	X
Systems maintenance	O	O	O	X
Systems operations	N	N	O	O
Other Miscellaneous Products/Services				
Site preparation	O	O	O	X
Data processing supplies	O	O	O	X
Processing/network services	N	N	O	X
Data/voice communication services	O	O	O	O

X = Normal service

O = Optional, dependent on vendor

N = Not normally supplied

Though it may not be obvious within the level explanations, an underlying trend from Level 1 to Level 4 is the shift from a technology base to a business base in vendor perspective and image. Level 1 firms tend to be brought in by clients to deal with a specific technology issue, while Level 4 firms prefer to begin with a request for assistance in resolving a business automation problem. Migration to a higher level involves the addition of the capability to provide that level's components.

EXHIBIT IV-4

Representative Desktop Vendors Within Levels

Vendor	1	2	3	4
Big 6 firms				X
DEC				X
EDS				X
Integris (Bull)				X
ISSC (IBM)				X
Perot Systems				X
SAIC				X
SHL Systemhouse				X
Turnkey VAR vendors (ASK, etc.)			X	
ENTEX (formerly JWP)	X	X	X	
Computerland affiliates	X	X	X	
Some software product vendors		X	X	
Sears Business Centers	X	X		
Computerland	X	X		
Local network integrator	X	X		
Stores (Computer City, et al.)		X	X	

Allocating vendors to a specific level is difficult, if not impossible, since any one vendor can fit more than one level. This list does not propose to be complete or exhaustive, but is composed of well known, national firms for illustrative purposes. The level indicated for any of the included vendors is based on the perception of the service components they provide directly. Within all levels of desktop systems integration are many vendors, composed mainly of local companies, regional firms, industry specialists and software package expert organizations.

C

Vendor Strategy Directions

Based on report findings, INPUT has recognized several vendor strategies that take advantage of the perceived openings. These strategies include: integration migration, smaller client niche, niche subcontracting and additional, specific software expertise.

1. Level Migration

The types of companies involved in integration activities that involve desktop systems is much more diverse and fragmented than the standard SI market. The primary cause of this difference is based on the many integration offerings that have grownup around providing service to desktop users. These desktop services include the simple setup and generic software installation of PC units as part of the equipment sale, to the request to add desktop support from a mainframe outsource vendor. Often these "lesser" services have gone unaddressed by the traditional SI vendors. However, providing these services to the PC user and IS organizations continues to generate some very substantial contracts and growth in companies.

The trend in suppliers to migrate to higher service levels will continue and be driven by several factors. Exhibit IV-5 lists the primary reasons for vendors to seek level migration. However, not all vendors can, or should, consider wholesale level shifting.

EXHIBIT IV-5

Primary Migration Factors

- Expanded capability in desktop software and hardware
- Users ask vendors for more, i.e., users seek business problem solutions with desktop systems
- Lack of ability in downsized IS organizations to support desktop implementations
- Shrinking profits from a product installation strategy caused by increased price pressure
- Finding that they are leaving most of the service business to others
- Can be the means to long-term company growth

2. Vendors Agree Opportunity is Greater with Large Clients

Interviews with vendors, of all types, determined that the greatest opportunity exists with larger client firms. Exhibit IV-6 shows vendor rating based on a scale of 1 to 5 where 5 indicates many opportunities and 1 is equated to no opportunities.

EXHIBIT IV-6

Vendor Opportunity Rating by Client Size

	Rating
Clients over $200 million	4.4
Clients between $50 and $200 million	3.9
Clients less than $50 million	2.9

As would be expected, most vendors are interested in, and poised to approach, large client businesses. It is within this target group, most call it the Fortune 500 and 1,000, that the most opportunity is expected by the vendor group and where they seek business most aggressively.

An exception to this, and the factor that caused the higher than anticipated rating for smaller client companies, was the input of smaller network integrator type companies (Levels 1 and 2).

Desktop SI opportunity exists at all business sizes based on the nature of the systems and the need for assistance that defies business size. Further, fertile ground can exist where the big SI firms are not interested (i.e., the smaller client company). In fact, it is with smaller clients that many smaller firms have established their current business.

3. Specialized Affiliation Niche Strategy

The vendor focus on supplying specialized implementation support for a particular software product or equipment vendor is used by some smaller firms to establish a core business. Generally, the relationship is based on an affiliation with the primary vendor who provides sales leads and offers the affiliate training to remain current with product changes.

All vendors indicated that some of their desktop integration business was involved in the implementation of cross-industry application products.

Exhibit IV-7 shows the results of our vendor interviews regarding the proportion of total response for each of the common cross-industry areas.

EXHIBIT IV-7

Vendor Cross-Industry Application Integration Proportion

Application Type	Percent of Response
Planning and analysis	21
Accounting systems	20
Engineering and scientific	20
Human resources	15
Office systems	15
Other, includes sales and marketing, etc.	9

The most significant factor, determined by this area of questioning, is that all vendors indicated some level of cross-industry application implementation as part of their overall desktop business. Hence, vendors frequently assist clients in the implementation of this type of software and some firms have established this as the core of their business.

The calculation of response percentage shows a variation among these application types. The difference among the application types is caused by two factors. Those types with higher percentages exhibit a higher availability of universal software to address the function and the user is more interested in the results of automation for those business functions.

4. Vendors Rate Areas for Subcontractor Opportunity

INPUT's exploration of integration service levels used a list of 14 service components that cover the wide spectrum needed to respond to a client's desktop automation needs. Not all components are operative in all situations, and no vendor is prepared to supply all components. Hence, vendors frequently use subcontractors to provide a full-client solution.

Exhibit IV-8 shows a view of subcontractor opportunity for seven of the components that may be needed to fulfill a client requirement. The vendor group was asked to rate these components based on a 1 to 5 scale, where a 5 is indicative of many opportunities and a 1 used to indicate no opportunity.

EXHIBIT IV-8

Vendor Ratings of Subcontractor Component Opportunity

Service Component	Rating
Systems software modification	3.3
Education and training	3.3
Site preparation	3.1
Voice communications services	2.9
Application software modification	2.7
Equipment modification	2.4
Special equipment development	2.4

Since a 2.5 rating is considered average, most of these components rate better than average. INPUT believes the primary reason for the general, above-average opportunity ratings for this group of components is that most vendors do not retain permanent staff to address these lower potential requirements at all times. Instead they subcontract for these activities when contracts specify their inclusion.

There are two exceptions that are more commonly needed, but remain fertile for subcontractors. Integration vendors frequently use outside help to perform the education and training portions of their implementations. In some cases this is expected of application software suppliers. In others, particularly those with significant modification, education specialists develop and present training for the client's staff. Some primary vendors even routinely outsource this activity.

The relatively high rating, evidenced by application software modification, is a combination of two factors. All levels of integration vendors tend to subcontract for application modification assistance. Higher integration-level vendors subcontract during temporary high need situations and provide specialized skills. Lower-level implementors, who have limited or no application software staff, must resort to subcontractors more frequently. Affiliation with either type of vendor can provide opportunity for some to function at higher integration levels.

D

Representative Desktop Systems Integration Projects

INPUT selected the results of three user interviews for inclusion as examples of desktop systems use. These particular user projects were chosen to illustrate the points made in this report. In addition, there are similarities in their expanding use of desktop application solutions, their mix of application type, use of external servicers and their questionnaire responses that generally mirrored the summary of all user responses.

1. Case Study One - Major Branch Office Processing Network

General environment - This business has historically been a major mainframe user, but has never seriously considered outsourcing. Their current technical philosophy is to shift to a client/server environment, though this major project does not eliminate their current dependence on mainframe processing. They do have a history of PS use.

Desktop applications - The application is a branch office automation project being built on a network of geographically disbursed desktop systems. The applications planned for inclusion are, a custom built business process application a financial package, a word processor, E-mail and a distributed human resources package. The system for each office will be capable of independent functioning.

System specifications - The system will have between 500 and 600 networked units. There are three network levels in total: each branch office will have a LAN, branch office LANs will be connected to minicomputer-based data servers in regional offices and the regional offices will be connected to each other and to the company's headquarters. The branch office-level of the system is currently being tested and the full number of servers is not known. The operating environments are UNIX with an Oracle base for the primary business application.

External service use - The company went through a business process re-engineering (BPR) analysis run by an external consulting firm as a preliminary stage to the establishment of the desktop system design. Following BPR completion, they decided to use a different firm, one of the Big 6, for implementation assistance. The Big 6 firm's specific duties include project oversight and change management, particularly related to the branch office environment.

The development of the business application is being done by internal IS staff, supplemented by external technical specialists. They are also doing the actual installation of the human resources package, with vendor assistance.

The complex and large project's SI role is being performed by the IS department, with user departments as clients.

2. Case Study Two - Major Desktop Systems User

General environment - Their major processing was done on minicomputers under a centralized IS structure. Their more recent history has been to decentralize processing using client/server technologies. They have historically been a user of external PS.

Desktop Applications - They have at least five separate applications that run on desktop system networks. Four of these support the primary business operating functions and the fifth supports finance operations (general ledger and accounts payable).

System specifications - The size of each network is between five and twenty-five desktop units with a total of eight servers. Each of the business processes is independent, so the general network interface is for data feeds that follow processing steps.

External service use - The four business applications were custom built to company designs and developed with the assistance of external PS vendors. In each of these applications, SI was not contracted. However, the financial application, a cross-industry package implementation, was done through a full SI service contract.

3. Case Study Three - Primarily Mainframe Processing, but Desktop Growth

General environment - This business depends upon mainframe processing running normal industry applications packages for primary daily operations. Though they frequently use mainframe application technical specialists, they are not a normal user of PS vendors.

Desktop Applications - They have at least five desktop applications functioning. Two of these are business processing applications, but these are not business critical and are standalone department automation networks. Though the records maintained are critical, their imaging network is currently limited to support the records of a single department. Their finance application is the network version of a standard cross-industry accounts payable package. Finally, the marketing desktop application is a vertical industry package.

System specifications - Three of their applications run in network environments, but are not connected to each other nor to the mainframe. The other two, marketing and one of the business processors, are standalone desktop applications.

External service use - Though this company does not frequently use external service organizations, they have used some of the standard SI service components for each of these systems. In one case, one of the business operation applications, they used a full SI contractor for the system implementation.

4. Case Study Summary

These case studies are a select set of the business use of desktop systems and may not be representative of the general user population. Some interesting points were observed that defy some of the conventional wisdom regarding desktop SI use.

EXHIBIT IV-9

Case Study Summary

- Desktop systems are being implemented to supplement processing by a primarily mainframe-oriented business
- SI tasks are being done internally for the most complex desktop system case study
- External SI is currently being used by a business that does not typically use PS
- A client/server-oriented business is using external SI for the implementation of a cross-industry application package.

V

Keys to Success in Desktop Systems Integration

It is clear desktop-based solutions will be included within much of the automation in the 1990s. The user need for external support, including integration assistance for these desktop environments has, and will, continue to be one of the primary growth areas. Building on the prior chapter's views of users and vendors, this chapter addresses some of the elements that are keys to success. These elements could help avoid failure and can assist vendors pursuing specific strategies. What are the key elements that will allow vendors, of all types, to capitalize on this growth? Indeed, what must vendors do to survive this era of rapid technology change and competitive fragmentation.

A

General Perspectives

The greatest number of vendors in the desktop integration market currently function within INPUT's defined lower-integration service levels and operate a technology-based business (e.g., implementing networks, installing packaged software, etc.). Today, these are lucrative and necessary service activities. INPUT has found many of these technology-based vendors aspire to higher levels of integration service and want to establish deeper relationships with their clients. In part, this desire is driven by the price competition that is cutting their profits. They are also being attracted by the realization their current relationships could be enlarged if they provided these higher-level integration services.

Although providing a broader range of services should increase vendor profit margins, offering these services also adds an increased degree of financial and project fulfillment risk. Vendors wanting to upgrade levels must realize they are entering a different business and pay careful attention to the new success factors and pitfalls.

1. Level Migration Success Keys

Exhibit V-1 itemizes some of the key areas important to success when making level transitions.

EXHIBIT V-1

Keys to Success in Desktop Systems Integration

- Establish a business problem focus within the organization
- Develop customer industry knowledge
- Learn about and promote factors that cause users to shift to desktop (e.g., downsize)
- Develop or acquire project management people and tools
- Start with something having a reasonable assurance of completion
- Use existing client base as a learning ground
- Broaden client base and penetration
- Become more flexible, but remember the bottom line

These keys are a combination of elements that include proper preparation, marketing ingredients and fulfillment requirements. They focus on addressing the areas that may require staff development or staff changes.

Modifying vendor marketing and sales focus from technology to business is basic, yet not simple. The client for high-level services seeks a different vendor and may even be a different individual than the technology purchaser. The concentration is on the establishment of business partnerships, rather than on the technology supplier. The client partner is often a business user, not the IS department. The vendor must seek introduction to these clients, yet not alienate current connections to IS management.

Acquiring knowledge of the client's industry is also basic to the changeover. Clients expect familiarity with their business and its problems from vendors at higher service levels.

Exhibit III-9, rates the significant trends vendor and user respondents consider key to desktop systems use. The difference in rating between the two groups indicates a lack of similar vision. The successful vendor should try to see the factors like a user and employ them during sales presentations. To do this, vendors must first develop a full understanding of these business trends. Remember, to a business user, downsizing is the reduction in staff count, not the shift of application systems to smaller computers.

Higher-level service projects are more complex to manage and often require more sophistication. INPUT recommends the development or acquisition of project management techniques and tools that can help projects run true to schedule. This may also mean different vendor staff than currently exists.

Regardless of how well preparation is done, there is no better teacher than experience. Although the elements of starting small with an existing client may be too obvious, they are worth mentioning. A small step with a forgiving current relationship may well be the most important step on the road to success.

Desktop SI is certainly an expanding market, with many vendors jockeying for business. Although a vendor must maintain existing relationships, now is the time for expansion. Vendors should move to increase their market in current core-level of integration and proceed with service-level migration to assure they do not miss this expansion opportunity. Movement should be with caution however, because the market is turbulent in its expansion. Vendors must maintain a continuous awareness of trends and react to them decisively.

Finally, expansion in services and market will require increased vendor flexibility. However, vendors are cautioned to avoid too much erosion to their bottom line profits in order to keep up with the increased pressure of competition.

2. Desktop Integration Concerns

The prior chapters have addressed the issues of desktop systems and various integration services both separately and in combination. By any measure the future appears bright, but are there potential pitfalls?

Though several respondents indicated they saw little to stem the increase in desktop systems implementation beyond slow economic growth, others saw the potential for setbacks. Exhibit V-2 itemizes the more significant responses, separated into user and vendor lists.

EXHIBIT V-2

Trends That Could Limit Growth in Desktop Systems

- User List
  - Short life span of technology
  - Failure of technology to meet user expectations
  - Lack of centralized technology management
- Vendor List
  - Inability to keep up with constant technology changes
  - Difficulty to maintain technology skills for products
  - Stability of the vendor community
  - Inability for quality staff growth to address demand

Based on the premise that avoiding pitfalls is basic to attaining success, the listed issues may be the keys.

Three of the seven limiting trends mentioned by either group are similar in concern for the increasing velocity of technology change. Users are concerned their large investment in desktop could be in yesterday's technology or, *at least*, not tomorrow's best technology. This is an IS user concern, but not one that really disturbs the business user. The business user just wants the solution to work.

The difficulty to keep up with technology change is a main concern for vendors. They too have the worry of investing resources in the wrong direction, yet they must continue to invest in training just to keep current.

The second user issue, failure of the technology to meet user expectations, sounds like the fear of history repeating itself. The increasingly direct role of the user in technology solutions will insure expectations are met. Although this does not eliminate the problem, it will make more projects be perceived as successful.

The final user concern, lack of centralized technology management, mirrors of one of the user's high-rated trends that promotes desktop systems and standards compliance in Exhibit III-9. Vendors must address this concern in their planning and designs to keep this issue under control. Again, the concerned user is IS. Many business users only see this issue when it causes them problems in connectivity. The issue should not be ignored by vendors. By insuring a fit, they expand their role with the client.

The two final vendor issues are interrelated and conflicting, but can affect business. These concerns, general vendor stability and attracting quality staff to support growth, reflect the feeling that failure in either aspect is not only detrimental to the failing vendor, but can have a damaging affect on all vendors. These concerns are elevated by the movement of new vendors into desktop integration.

Vendors need to be flexible in understanding what the user really needs, is frequently beyond their request for service. Additionally, they must be vigilant in tracking technology change and keep their approaches and staff current. These factors are even more important for the vendor who is attempting to migrate to higher levels of integration.

3. Conclusions

The migration of vendors into higher-level services will tend to fragment the market for desktop integration services and place pressure on traditional high-end vendors. INPUT expects increased pressure on pricing as the new entrants compete for clients. In addition, some measure of the limiting trends may be realized. Specifically, the new entrants lack of experience will probably increase the project failure rate, raise the rate of implementations that do not meet users' expectations and cause some to disappear as companies. Although these fears are real, INPUT does not expect the volume of problems to be large enough to cause appreciable slowing of desktop integration growth.

Although migration is seen throughout this report as upward, is there a trend in downward migration? This may occur as some vendors realize their future lies in their best efforts. Downward migration would involve pulling back from higher-level service offerings. This migration would be accomplished through acquisition and vendor downsizing.

B

Market Selection

There are many ways to segment the market for services and those most frequently used are; vertical industry, technology orientation and a focus at a particular niche business. The selection of a market strategy for addressing desktop SI is not uniform throughout the four levels of integration service introduced in Chapter Four: 1-interconnection, 2-implementation, 3-turnkey integration and 4-systems integration. In general terms, the service offerings at the higher levels tend to be business focused, while the lower-level services are technology-oriented.

1. Technology Orientation

A technology-oriented vendor is focused at providing support for specific technologies either directly to clients or as a subcontractor. The particulars of a desktop system vendor's expertise can be specific equipment, systems software, networks and many others.

Exhibit V-3 lists some of the keys to success for a technology orientation.

EXHIBIT V-3

Technology Orientation Keys

- Initiate alliances with technology-supplier vendors
- Establish alliances with prime contractor vendors
- Provide continuous technology training for staff
- Create an environment that supports adding business knowledge

The need for alliances, both with vendor suppliers and prime contractors, is a requirement. Assuming the vendor is not a competitor with either alliance group, these arrangements may become the core of the business. Both will tend to feed clients and can be avenues for training and support that might not otherwise be possible.

Supplier vendors typically provide allied vendors with client referrals, product training and future direction advice. They may also increase a vendor's market potential by adding new products and possibly provide financing.

Prime contractors may be the majority of the direct clients of a technology specialist firm. They also provide contact with direct user clients and other prime contractors. Finally, they frequently have access to a much broader base of information and education.

The selection of technology, as a total vendor market direction, will limit the vendor to lower integration level activities, either directly or as a subcontractor. This direction also places the rather significant burden of continuing education to remain technically current directly on the technology-oriented vendor, a primary concern of vendors (Exhibit V-2). However, this may be an advantage, because others may choose to let the technology vendor maintain the expertise for them.

Room exists for technology-oriented vendors, but the future is tenuous. The risks are; an inability to remain current, expertise in a technology that fades, having others take over in your expertise area, equal alliance-mates and picking an expertise in too small a market.

2. Does Any Vertical Industry Segment Seem to Offer Greater Opportunity ?

Vendor Response Analysis:
A review of vendor responses regarding vertical industry desktop business does not show a significant difference between the sectors. Rather, most vendors focused not on vertical industry, but on company size (Exhibit IV-6). Several indicated no knowledge of vertical industry differences, a further indication that little connection exists between industry sector and opportunity.

Opportunity Data Analysis:
INPUT found only a marginally above-average use overall for external services when there is a higher-than-average use of desktop in projects (3% difference). Is there a correlation between a higher-than-average use of external services (both SI and PS) and a higher percentage of desktop projects within vertical industry sectors? Exhibit V-4 shows some areas of variance between vertical industry sectors.

EXHIBIT V-4

Analysis of External Service Use and Use of Desktop in Projects

	External Service Use (Percent)		
	Universe	With Desktop	Variance
Banking and Finance	33	33	None
Business Services	66	62	- 4
Discrete Manufacturing	15	14	- 1
Education	4	8	+4
Health Services	57	40	-17
Insurance	9	6	- 3
Miscellaneous Industries	83	92	+ 9
Process Manufacturing	15	15	None
Retail Distribution	60	59	- 1
State and Local Government	69	71	+ 2
Telecommunications	69	44	-15
Transportation	55	64	+ 9
Utilities	37	50	+13
Wholesale Distribution	36	50	+14
Overall	39	36	

User projects in six industry sectors exhibit a greater tendency to use external services with their desktop systems than their sector's tendency to use external servicers. In four of these sectors (miscellaneous industries, transportation, utilities and wholesale distribution) the positive variance is a significant amount. Of the six sectors with lower external use with desktop systems, two (health services and telecommunications) show large negative differences. Finally, two industry sectors show no difference.

The primary premise that underlies all external service contracts is that the client company does not have the appropriate staff resources or the resources are not available. With this in mind, the targets for desktop integrators would be the four sectors that are shown to be high users of desktop external services. The two sectors exhibiting lower external use in desktop situations could be assumed to have sufficient internal staff.

This analysis could be useful as part of an overall marketing analysis. However, the differences between individual companies regarding their need for specific external services tends to show greater variance of use, even within a vertical industry sector.

Additionally, for a vendor to focus on a particular industry sector requires the vendor to acquire a knowledge base regarding that industry to be seen as credible. This is particularly significant when vendors attempt to provide services at higher integration levels.

3. Product Niche Orientation

Research found a significant group of desktop SI vendors whose business base combined with a particular business functional area, business application package or specialized industry application. In particular, they were involved with providing full solutions for cross-industry functions or filling niche business automation needs. Though all vendors indicated some level of involvement with cross-industry applications (see Exhibit IV--7), niche vendors focused on one or more functions (e.g., financial applications, human resources, automobile repair estimates, etc.).

EXHIBIT V-5

Keys to Product Niche Orientation Success

- Vendor basis must be oriented to provide a solution to the specific business automation issue
- Marketing must be prepared for selling to the business user as well as IS leadership
- Close alliance with product vendor or vendors is required
- Must be viewed as a function specialist, who also is a technologist

The vendor providing services of this variety must be perceived as expert in all aspects of the business function. Their role is beyond that of a technology implementor—more as a business analyst who will enhance the process as part of the automation project. All manner of training and support will be anticipated.

Frequently, the user is the buyer, or at least has a primary role in the decision making. However, the vendor must be capable of assuring client IS staff of vendor technology proficiency.

Product vendor alliances are needed to assure problems are quickly resolved, appropriate training is available and product information current. Since the product implementation vendor is frequently viewed as the product representative, the product vendor also has a vested interest in assuring this is a good relationship.

Finally, the desktop implementation vendor is responsible for assuring the business solution functions as expected. If the client relationship includes assistance in product selection, this is even more significant. To assure this, the vendor must be fully conversant with the client's functional needs.

4. Conclusion

The selection of a market and a direction are important vendor issues. However, the issues are secondary to selecting a direction that makes use of vendor strengths and avoids vendor weaknesses. If a direction change is contemplated, the move should be approached methodically, completing appropriate preparations early. Even if no change is to be done, there is much to be done just to survive.

A

Definition of Terms

A
Desktop System

A system, to qualify as desktop, requires that the application system and the data be resident within the desktop unit while processing. The desktop unit may be classed as either a personal computer or a workstation. Though network connection is not a requirement, it is expected that most of these systems will be network units.

B
Professional Services

This category includes four submodes: consulting, education and training, software development and applications management. Exhibit A-1 provides additional detail.

- *Consulting:* Services include management consulting (related to IS), IS re-engineering, IS consulting, feasibility analysis and cost-effectiveness studies and project management assistance. Services may be related to any aspect of the IS, including equipment, software, networks and systems operations.

- *Education and Training:* Services that provide training and education or the development of training materials related to IS and services for the IS professional and the user. Included are computer-aided instruction, computer-based education and vendor instruction of user personnel in operations, design, programming and documentation. Education and training provided by school systems is not included. General education and training products are included as a cross-industry market sector.

- *Software Development:* Services include user requirements definition, systems design, contract programming, documentation and implementation of software performed on a custom basis. Conversion and maintenance services are also included.

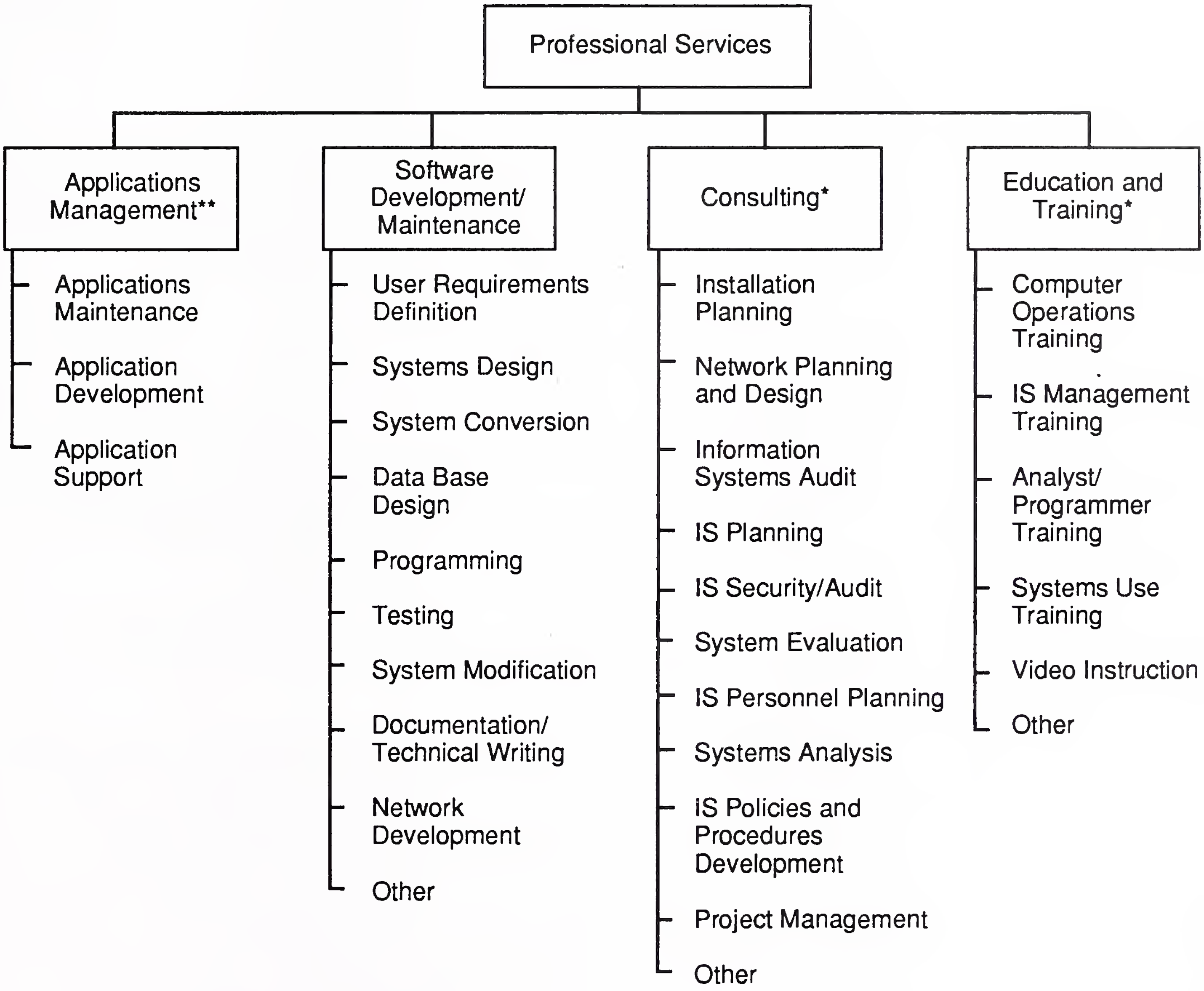
- *Applications Management*: The vendor has full responsibility for maintaining and upgrading some or all of the application systems a client uses to support business operations and may develop and implement new application systems for the client.

  An applications management contract differs from traditional software development in the form of the client/vendor relationship. Under traditional software development services, the relationship is project-based. Under applications management, it is time- and function-based.

  These services may be provided in combination or separately from platform systems operations.

EXHIBIT A-1

Professional Services Market Structure



*Related to computer systems, topics, or issues

**Vendor assumes full responsibility on contracted longer term basis

C

Systems Integration (SI)

Systems integration is a vendor service that provides a complete solution to an information system, networking or automation development requirement through the custom selection and implementation of a variety of IS products and services. A systems integrator is responsible for the overall management of a SI contract and is the single point of contact responsible to the buyer for the delivery of the specified system function, on schedule and at the contracted price. (Refer to Exhibit A-2.)

The components of a SI project are the following:

- *Equipment*—information processing and communications equipment required to build the systems solution. This component may include custom, as well as off-the-shelf equipment, to meet the unique needs of the project. The SI equipment category excludes turnkey systems by definition.

- *Software products*—prepackaged applications and systems software products.

- *Professional services*—the value-added component that adapts the equipment and develops, assembles or modifies the software and hardware to meet the system's requirements. It includes all of the PS activities required to develop, implement, and if included in the contract, operate an information system, including consulting, program/project management, design and integration, software development, education and training, documentation and systems operations and maintenance.

- *Other services*—most SI contracts include other services and product expenditures that are not classified elsewhere. This category includes miscellaneous items such as engineering services, automation equipment, computer supplies, business support services and supplies and other items required for a smooth development effort.

EXHIBIT A-2

Products/Services in Systems Integration Projects

Equipment

- Information systems
- Communications

Software Products

- Systems software
- Applications software

Professional Services

- Consulting
  - Feasibility and trade-off studies
  - Selection of equipment, network and software
- Program/project management
- Design/integration
  - Systems design
  - Installation of equipment, network, and software
  - Demonstration and testing
- Software development
  - Modification of software packages
  - Modification of existing software
  - Custom development of software
- Education/training and documentation
- Systems operations/maintenance

Other Miscellaneous Products/Services

- Site preparation
- Data processing supplies
- Processing/network services
- Data/voice communication services

(Blank)

B

Vendor Questionnaire

To: ______________________________

FAX: ______________________________

Hello, my name is Bill Becker, from INPUT, the international information services market research and consulting company.

We are conducting research regarding Desktop Systems and their relationship to the delivery of Systems Integration and similar professional services.

The following questions are designed to assist our research. Your responses will be held in the strictest confidence, all data will be reported without attribution and presented in aggregate form.

INPUT will be pleased to share a summary of the research results with you. Your prompt response via FAX is requested, since our deadline for report preparation is rapidly approaching.

Your Name: ______________________________

Title: ______________________________

Company: ______________________________

Address: ______________________________

____

____

Phone: ______________________ FAX: ______________________

Company size in terms of gross revenues: $ ______________

From: Bill Becker, INPUT Corporation

Phone: (410) 823-8700 FAX: (410) 337-7214

Please use the following definitions in constructing your answers:

Desktop systems (DT) are those where significant processing is conducted within a personal computer or workstation.

Systems integration (SI) refers to the vendor service that provides a complete solution to an information system, network or automation development requirement. A systems integrator is responsible for the overall management of the SI contract and is the single point of contact to the buyer of the specified system function.

Vertical industry system is one that supports a specific industry and is not of use in other industry categories, e.g., manufacturing, transportation, financial services, etc.

Cross-industry application is one that is used by more than one industry, e.g., accounting, human resources, office systems, etc.

1. Does your company offer desktop systems services? Y__ N___
2. Do you expect to in the future (5 Years) Y__ N___
3. Which desktop systems service components do you offer:

Purchase consultation equipment __________
Software ____________________________
Networks ___________________________
System supply equipment ________________
Software ____________________________
Development _________________________
Equipment maintenance _________________
System installation ____________________
LAN management ______________________
Help desk type user services _____________
Systems support _______________________
Application support ____________________
User training __________________________
Logistics management____________________
Network interface management ____________
Systems integration_____________________
Other—specify__________________________

4. How would you classify your company by these vendor types:

   Professional services firm ____________
   Systems integrator ____________
   Equipment supplier ____________
   PC distributor ____________
   3rd-party maintenance supplier ____________
   Other—specify ____________

5. What other types of service do you offer beyond desktop?

   Mainframe operations ____________
   Applications management ____________
   Network operations ____________
   Other—specify ____________

6. What portion of your contracts includes a desktop component? ___%

7. Do you offer SI services? Yes___ No___.

8. What portion of your contracts includes an SI style of service? ___%

9. Do you expect your company's revenues to: increase ___ decrease___
   stay the same ___ for these combined services over the long term?
   Why? ____________

10. In your opinion, what are your company's strengths and weaknesses in approaching this market?

    ____
    ____

11. If you do cross-industry application systems work, which type/s?

    Accounting systems ____________
    Human resources ____________
    Office systems ____________
    Engineering and scientific ____________
    Planning and analysis ____________
    Sales and marketing ____________
    Other—specify ____________

12. What proportion of your desktop/SI business has been within the various vertical industry groups? What do you expect in the future?

	Current	Future
Banking and finance	______	______
Discrete manufacturing	______	______
Education	______	______
Insurance industry	______	______
Health services	______	______
Process manufacturing	______	______
Retail distribution	______	______
State and local government	______	______
Telecommunications	______	______
Transportation	______	______
Utilities	______	______
Wholesale distribution	______	______
Business services	______	______
Federal government	______	______

13. What proportion of software modification does your company normally do to applications software? Please use the scale 1 to 5, where 5=changes often exceed 50% and 1=no changes.

Cross-industry applications	1 2 3 4 5
Vertical industry applications	1 2 3 4 5

14. Please rate the size of company you feel offers the most opportunities for desktop systems integration services for your company. Please use a 1 to 5 scale, where 5=many opportunities and 1=no opportunities.

Over $200 million	1 2 3 4 5
$50-$200 million	1 2 3 4 5
Under $50 million	1 2 3 4 5

15. Do you see opportunities for specialty subcontractors? If so, what areas offer the most opportunity? Please use the 1 to 5 scale again where 5=many opportunities and 1=no opportunity.

Equipment modification	1 2 3 4 5
Special equipment development	1 2 3 4 5
Systems software modification	1 2 3 4 5
Application software modification	1 2 3 4 5
Education and training	1 2 3 4 5
Site preparation	1 2 3 4 5
Voice communications services	1 2 3 4 5
Other—specify________________	
____________________________	1 2 3 4 5

16. What is the most common role for your client's IS department? Please use 1 to 5 rating, where 5=most common, and 1=never.

Direct buyer	1 2 3 4 5
Advisor to user buyer	1 2 3 4 5
Minor involvement	1 2 3 4 5
Not involved	1 2 3 4 5

17. Do you see this role changing? If so what trends do you see? Yes___ No___

Trends ____

____

____

18. How important do you think the following trends are to the growth of the desktop systems integration market? Please use the scale 1 to 5, where 5=extremely important, and 1=not important.

Downsizing	1 2 3 4 5
Increase in network applications	1 2 3 4 5
Compliance with standards	1 2 3 4 5
Lack of client technical skills	1 2 3 4 5
Business users control of automation	1 2 3 4 5

19. What trends do you see that limit the growth of this market?

____

____

____

Additional comments:

____

____

____

C

User Questionnaire

To: ____________________

FAX: ____________________

Hello, my name is Bill Becker, from INPUT, the international information services market research and consulting company.

We are conducting research regarding Desktop Systems and their relationship to the delivery of Systems Integration and similar professional services.

The following questions are designed to assist our research. Your responses will be held in the strictest confidence, all data will be reported without attribution and presented in aggregate form.

INPUT will be pleased to share a summary of the research results with you. Your prompt response via FAX is requested, since our deadline for report preparation is rapidly approaching.

Your Name: ____________________

Title: ____________________

Company: ____________________

Address: ____________________

____

____

Phone: ____________ FAX: ____________

Company primary business: ____________________

Company size in terms of gross revenues: $ ____________

From: Bill Becker, INPUT Corporation

Phone: (410) 823-8700 FAX: (410) 337-7214

Please use the following definitions in constructing your answers:

Desktop systems (DT) are those where significant processing is conducted within a personal computer or workstation. They may be called client/server, LANs or connected to mainframe type systems, but processing must take place within the desktop units.

Systems integration (SI) refers to the vendor service that provides a complete solution to an information system, network or automation development requirement. A systems integrator is responsible for the overall management of the SI contract and is the single point of contact to the buyer of the specified system function.

1. Does your company currently have application systems that would qualify as desktop systems?

Yes ____ (please go to question 3.)
No ____
Do not know ____ (please give to someone who would know)

2. Do you expect to in the future (5 Years)? Y__ N___

Yes ____ (please go to question 3.)
No ____
Do not know ____ (please give to someone who would know)

END QUESTIONNAIRE IF YOUR RESPONSE WAS NO TO BOTH 1 AND 2.

3. What business applications are, or are planned to be, running in desktop environments?

Application	Number of units	Department
A		
B		
C		
D		
E		

4. Were external suppliers involved, or will they be involved in any portions of the listed applications?

No ____ (please go to question 9)
Yes ____ Please indicate the applications for each applicable service type.

Purchase consultation:
  Equipment ____________________
  Software ____________________
  Networks ____________________
System supply:
  Equipment ____________________
  Software ____________________
  Development ____________________
  Equipment maintenance ____________________
  System installation ____________________
  LAN management ____________________
  Help desk type user services ____________________
  Systems support ____________________
  Application support ____________________
  User training ____________________
  Network interface management ____________________
  Systems integration ____________________
  Other—specify ____________________

5. What type/s of information service companies does your company use?

Professional services firm ____________________
Systems integrator ____________________
Equipment supplier ____________________
PC distributor ____________________
3rd-party maintenance supplier ____________________
Other—specify ____________________

6. How did your company approach potential vendors for bids on these systems?

Through a...

Formal solicitation document? ______________________
Informal request to vendors? ______________________
Sole source request to one vendor? __________________
Approached current IS service supplier ______________

How many bids were evaluated?
  Number solicited ____________________________
  Number of responses __________________________

7. The following list includes most of the significant criteria for external service vendor selection. Please rate their relative importance to you on a scale of 1 to 5, where 5=most important, and 1=not important.

Breadth of technical ability	1 2 3 4 5
Experience with desktop systems	1 2 3 4 5
Prior references/reputation	1 2 3 4 5
Vendor size	1 2 3 4 5
Number of customers	1 2 3 4 5
Price of services	1 2 3 4 5
Vendor financial condition	1 2 3 4 5
Vendor independence	1 2 3 4 5
Single source for full system solution	1 2 3 4 5
Other—specify ____________________________	1 2 3 4 5

8. What other types of external information services does your organization currently use?

None ______________________________________
Mainframe operations ________________________
Applications management _____________________
Network operations ___________________________
Other—specify ______________________________

9. What is the most common role for your internal information services department, regarding desktop systems? Please use 1 to 5 rating, where 5=most common, and 1=never.

Systems implementor	1 2 3 4 5
Direct buyer	1 2 3 4 5
Advisor to user buyer	1 2 3 4 5
Minor involvement	1 2 3 4 5
Not involved	1 2 3 4 5

10. Would you consider external servicers in the future?

Yes____

No ____ If no, why not? ______________________________

____

____

11. In your opinion, what should vendors offer to potential clients to win contracts?

____

____

____

12. Please name three successful desktop services vendors.

A ____

B ____

C ____

13. In your opinion, how important do you think the following trends are to the growth of desktop systems? Please use the scale 1 to 5, where 5=extremely important, and 1=not important.

Downsizing	1 2 3 4 5
Increase in network applications	1 2 3 4 5
Compliance with standards	1 2 3 4 5
Lack of internal technical skills	1 2 3 4 5
Business users control of automation	1 2 3 4 5
Other—specify ____________________	1 2 3 4 5

14. What trends do you see that limit the growth of this type of system?

____

____

____

Comments: ______________________________

____

____

D

Industry Sector Definitions

A

Industry Sector Definitions

INPUT structures the information services market into industry sectors such as process manufacturing, insurance, transportation, etc. The definitions of these sectors are based on the 1987 revision of the Standard Industrial Classification (SIC) code system. The specific industries (and their SIC codes) included under these industry sectors are detailed in Exhibit D-1.

INPUT includes all delivery modes, except systems software products and equipment services, in industry market sectors.

Note: SIC code 88 is Personal Households. INPUT does not currently analyze or forecast information services in this market sector.

EXHIBIT D-1

Industry Sector Definitions

Industry Sector	SIC Code	Description
Discrete Manufacturing	23xx	Apparel and other finished products
	25xx	Furniture and fixtures
	27xx	Printing, publishing and allied industries
	31xx	Leather and leather products
	34xx	Fabricated metal products, except machinery and transportation equipment
	35xx	Industrial and commercial machinery and computer equipment
	36xx	Electronic and other electrical equipment and components, except computer equipment
	37xx	Transportation equipment
	38xx	Instruments; photo/med/optical goods; watches/clocks
	39xx	Miscellaneous manufacturing industry
Process Manufacturing	10xx	Metal mining
	12xx	Coal mining
	13xx	Oil and gas extraction
	14xx	Mining/quarrying nonmetalic minerals
	20xx	Food and kindred products
	21xx	Tobacco products
	22xx	Textile mill products
	24xx	Lumber and wood products, except furniture
	26xx	Paper and allied products
	28xx	Chemicals and allied products
	29xx	Petroleum refining and related industries
	30xx	Rubber and miscellaneous plastic products
	32xx	Stone, clay, glass and concrete products
	33xx	Primary metal industries
Transportation Services	40xx	Railroad transport
	41xx	Public transit/transport
	42xx	Motor freight transport/warehousing
	43xx	U.S. Postal Service
	44xx	Water transportation
	45xx	Air transportation (including airline reservation services in 4512)
	46xx	Pipelines, except natural gas
	47xx	Transportation services (including 472x, arrangement of passenger transportation)
Telecommunications	48xx	Communications
Utilities	49xx	Electric, gas and sanitary services

EXHIBIT D-1 (CONT.)

Industry Sector Definitions

Industry Sector	SIC Code	Description
Retail Distribution	52xx	Building materials
	53xx	General merchandise stores
	54xx	Food stores
	55xx	Automotive dealers, gas stations
	56xx	Apparel and accessory stores
	57xx	Home furniture, furnishings and accessory stores
	58xx	Eating and drinking places
	59xx	Miscellaneous retail
Wholesale Distribution	50xx	Wholesale trade - durable goods
	51xx	Wholesale trade - nondurable goods
Banking and Finance	60xx	Depository institutions
	61xx	Nondepository credit institutions
	62xx	Security and commodity brokers, dealers, exchanges and services
	67xx	Holding and other investment offices
Insurance	63xx	Insurance carriers
	64xx	Insurance agents, brokers and services
Health Services	80xx	Health services
Education	82xx	Educational services
Business Services	65xx	Real estate
	70xx	Hotels, rooming houses, camps, and other lodging places
	72xx	Personal services
	73xx	Business services (except hotel reservation services in 7389)
	7389x	Hotel reservation services
	75xx	Automotive repair, services and parking
	76xx	Miscellaneous repair services
	78xx	Motion pictures
	79xx	Amusement and recreation services
	81xx	Legal services
	83xx	Social services
	84xx	Museums, art galleries, and botanical/zoological gardens
	86xx	Membership organizations
	87xx	Engineering, accounting, research, management, and related services
	89xx	Miscellaneous services

EXHIBIT D-1 (CONT.)

Industry Sector Definitions

Industry Sector	SIC Code	Description
Federal Government	9xxx	
State and Local Government	9xxx	
Miscellaneous Industries	01xx	Agricultural production - crops
	02xx	Agricultural production - livestock/animals
	07xx	Agricultural services
	08xx	Forestry
	09xx	Fishing, hunting and trapping
	15xx	Building construction - general contractors, operative builders
	16xx	Heavy construction - contractors
	17xx	Construction - special trade contractors

Report Quality Evaluation

To our clients:
To ensure that the highest standards of report quality are maintained, INPUT would appreciate your assessment of this report. Please take a moment to provide your evaluation of the usefulness and quality of this study. When complete, simply fold, staple, and drop in the mail. Postage has been pre-paid by INPUT if mailed in the U.S.

Thank You.

1. Report title: ***Desktop Systems Integration Market*** (SI3)

2. Please indicate your reason for reading this report:
   - ☐ Required reading
   - ☐ Area of high interest
   - ☐ Area of general interest
   - ☐ New product development
   - ☐ Business/market planning
   - ☐ Product planning
   - ☐ Future purchase decision
   - ☐ Systems planning
   - ☐ Other ____________________

3. Please indicate extent report used and overall usefulness:

	Extent		Usefulness (1=Low, 5=High)				
	Read	Skimmed	1	2	3	4	5
Executive Overview	☐	☐	☐	☐	☐	☐	☐
Complete report	☐	☐	☐	☐	☐	☐	☐
Part of report (_____ %)	☐	☐	☐	☐	☐	☐	☐

4. How useful were:

Data presented	☐	☐	☐	☐	☐
Analyses	☐	☐	☐	☐	☐
Recommendations	☐	☐	☐	☐	☐

5. How useful was the report in these areas:

Alert you to new opportunities or approaches	☐	☐	☐	☐	☐
Cover new areas not covered elsewhere	☐	☐	☐	☐	☐
Confirm existing ideas	☐	☐	☐	☐	☐
Meet expectations	☐	☐	☐	☐	☐
Other ______________________________	☐	☐	☐	☐	☐

6. Which topics in the report were the most useful? Why? ______________________________________

7. In what ways could the report have been improved? ______________________________________

8. Other comments or suggestions: ______________________________________

Name ______________________ Title ______________________

Department ______________________

Company ______________________

Address ______________________

City ______________________ State __________ ZIP __________

Telephone ______________________ Date completed ______________________

Thank you for your time and cooperation.

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